MIURA

MANUAL

For tublar Boiler

EZ-500GO	EZ-500SGO
EZ-600GO	EZ-600SGO
EZ-800GO	EZ-800SGO
EZ-1000GO	EZ-1000SGO
EZ-1500GO	EZ-1500SGO
EZ-2000GO	EZ-2000SGO
EZ-2500GO	EZ-2500SGO
EZ-3000GO	EZ-3000SGO

Please use Miura Boiler after reading this Manual accurately and keep it at the place visible to you so that you may read it conveniently any time.

MANUAL No.	EZ-GO-01-100322

KOREA MIURA CO., LTD

MIURA

Thank you very much for your unchangeable encouragement on MIURA BOILER and purchasing it at this time.

Decide a person in charge of MIURA BOILER.

This manual is a guide for using MIURA BOILER.
Be sure to decide a person in charge of it befor using and the responsible person shall use it after understanding the manual fully.
And then proceed to working through carrying this manual with you all the time.

Contents of the manual

The major contents of this manual are classified into EZ type outline, major function, inspection on operation system before using, operation, repair & inspection and trouble & its remedy.

Guarantee

The matters to be observed on operation and safety described in this manual are related only to the case that the boiler is used only for the designated purpose.
Never use the method that is not described in this manual. We are not responsible for the using method that is not recorded in it.

Contact point on the product and manual

If you have any question on the purchased product or this manual, contact our A/S office any time without further hesitation.

Miura Boiler

Best partner for nature, water and environment

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I Terminology

The following captioned terminology has been used so that efficient handling together with safety may be made.
Please use the Boiler after understanding captioned terminology fully.

Warning

In case of incorrect handling it may cause the user to be killed or injured seriously.

Attention

In case of incorrect handling it may cause the user to be injured or incur material damage.

Note

In case convenient matters and points are explained in order to prevent the trouble of machine body and carry out efficient work.

Meaning of sysmbol mark

Page

The number beside this mark displays related page.

Prohibition

This mark displays prohibition.
Specific prohibition contents in the middles of this code and near it are displayed.

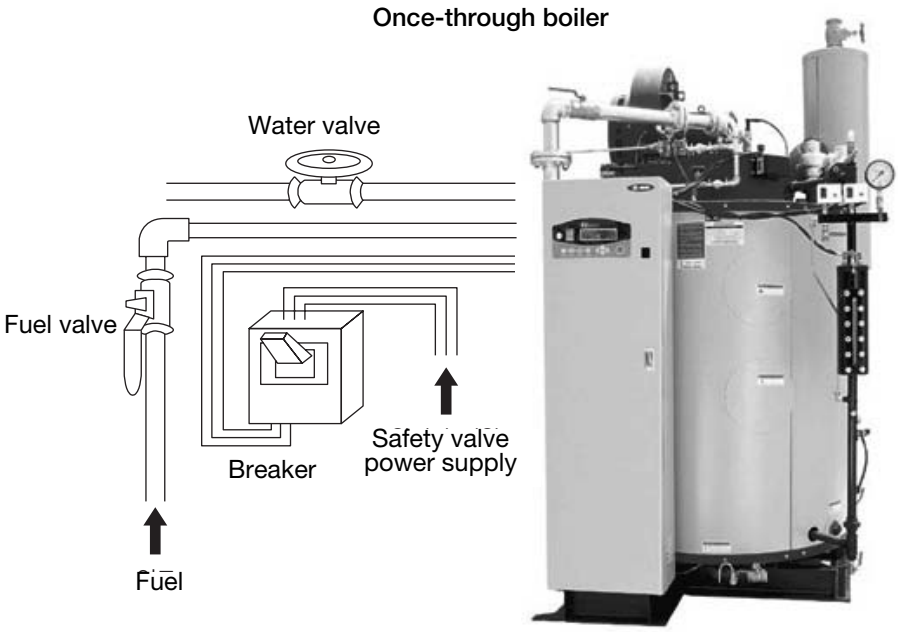
■ The terminalogies that have been used in this manual are collected and check the them and their meaning.

Terminology	Meaning	Practical Use
Under gas leakage inspection	Action of inspecting inside leakage of gas V/V.	Gas
Dur water supply	The condition of supplying water into the inside of boiler.	Gas, Oil
Operation standby	The condition of completing prior action in order that boiler operation may be made.	Gas, Oil
Pre purge	Ventilation of inside of combustion chamber before starting combustion.	Gas, Oil)
Ignition try	Condition of ignition trans operating	Oil
Pilot ignition	The condition of fire of burner.	Gas
Main try	Ignition of main burner.	Gas
Low combustion	The condition of 50% combustion of maximum combustion capacity.	Gas, Oil
High combustion	The condition of combustion of maximum combustion capcity.	Gas, Oil
Post fire	In oder to restrict gas pressure change at the time of stop at high fire, stopping without low fire.	Gas
Post purge	Ventilation of inside of combustion chamber after combustion.	Gas, Oil
Low water	When designated water level is not reached, an action without transition to ignition.	Gas, Oil
Combustion standby	The condition of operation standby due to isolation by pressure.	Gas, Oil
Scale	Attached substances impurities such as calcium and magnesium contaied in the water.	Gas, Oil
Sludge	Impurities sunk in boiler inside.	Gas, Oil
Raw water	The water before water treatment.	Gas, Oil
Soft water	The water removed from calcium and magnesium contained in the water.	Gas, Oil
Feed water	The water to be treated and trasferred to boiler or the condition of water transferring.	Gas, Oil
Rated evaporation	Amount per 1 hour of full steam to be made from supplied water.	Gas, Oil
Carry-over	The phenomenon that impurites and moisture in boiler water together with steam are given off.	Gas, Oil
Blowdown	Draining the water in boiler inside.	Gas, Oil
Water tube	Tube that boiler water flows in inside and is in contact with combustion gas.	Gas, Oil
O_2 LIMBER	System heating the supplied water to reduce O_2, melted in the water.	Gas, Oil
Mixed influx of air	The condition that P/P is not operated normally with influx of air into P/P.	Gas, Oil

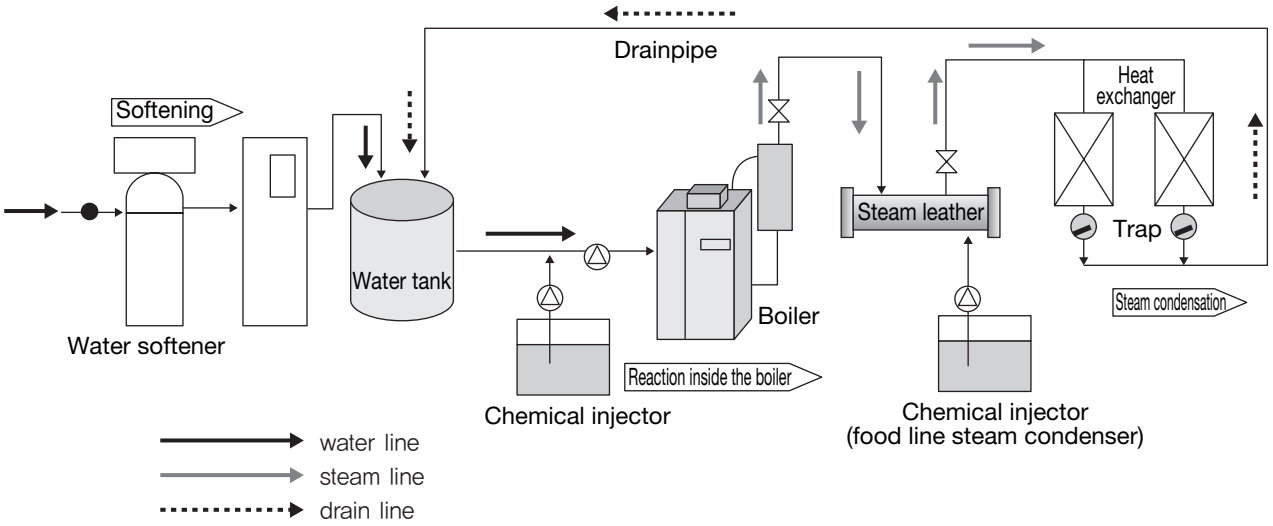
II Using purpose and operation principle

■ Once-through boiler

The boiler water pushed into the pipe is heated by burner combustion.
The heated water evaporates into steam and supplied to the load.



■ Boiler chamber and steam flow



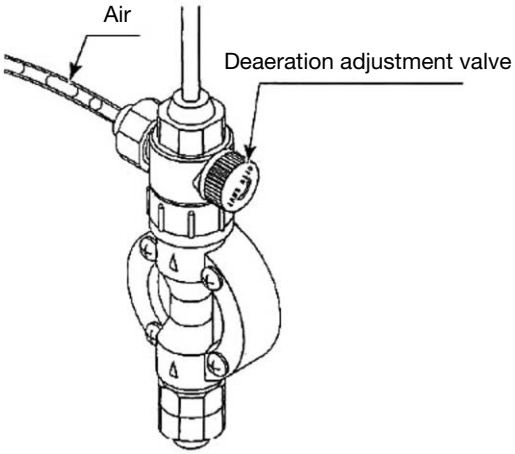
■ Chemical injector

It injects anticorrosive chemical into the boiler.

It injects pH adjuster, deoxidizer and scale remover into the water.
It is composed of the pump, chemical tank, pipes and valves.

Chemical injector

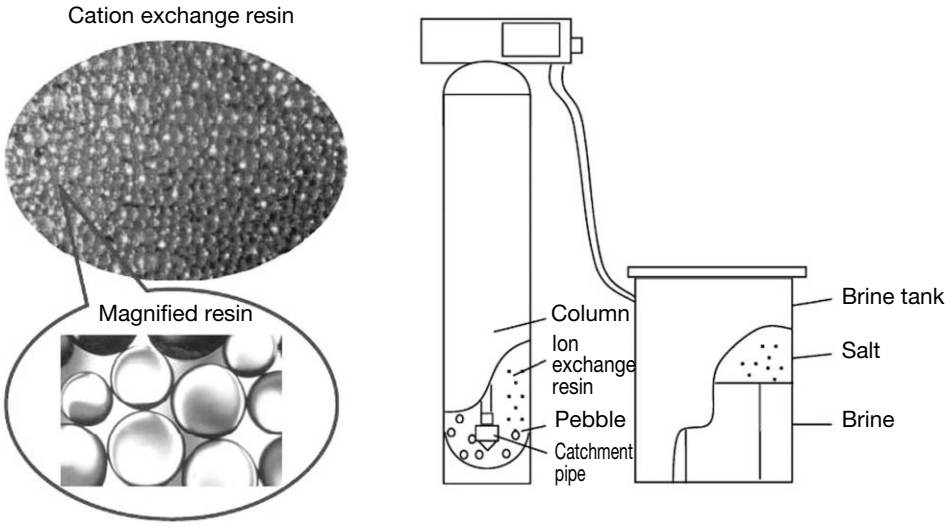
How to deaerate



■ Water softener

The source water is hard water in most cases. The water softener changes it into soft water.

It supplies source water into the column of about 1mm, transparent, yellowish-brown and filled with cation exchange resin, ion-exchanging the hardness components (Ca, Mg) with Na ion and removing the components.
With ion exchange capacity retained and due to the brine in the salt container, the cation exchange resin gives regular regenerations. The resin needs to be replaced or added when it is deteriorated.



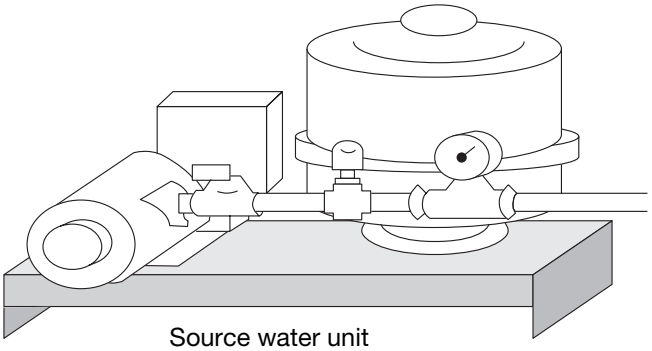
■ Hardness leakage checker

It checks the soft water treated out of the water softener.

Colormetry

■ Source water unit

It pressurizes source water up to the pressure the water softener needs.



Source water unit

Note

Tap water and groundwater, widely used as boiler water, contain various impurities that can cause scaling, corrosion, carryover and so on and greatly affect their lifespan and efficiency. This is why a water treatment system for water quality management is necessary.
Miura Boiler manufactures types of water treatment devices fitting into its boiler products.
The above are standard water treatment systems. Please consult our warranty service center about the systems optimized for the boilers you use.

III Basic careful matters

⚠ Warning

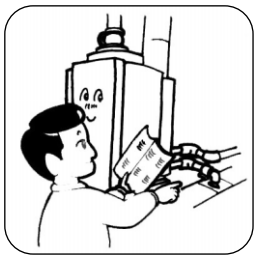
- When operating MIURA Boiler, observe all of the following careful matters.
  If not observed, personal accident may take place.

Careful matters before using the boiler

Check the installation condition.

Check that the machine has been installed accurately according to the inspection before using.

☞ 28page



Be sure to carry out a trial operation.

Carry out a trial operation by a person in charge of A/S after checking the installation.

Don't misuse the boiler.

Never operate the machine and do not repair work until this manual is understood fully.

Be sure to designate a person in charge of handling the boiler.

When using the machine, be sure to designate a person responsible for handling and the person use it after understanding this manual fully.

Never use boiler water as dringking one.

Since the boiler water can be changed by used water quality and piping materials, never use it as drink one.

Report are required when using the boiler.

In using the boiler various reports are required. Consult a person in charge of our marketing staff for the detailed matters.

⚠ Warning

Simple clothes and wearing of protective devices

Do work in simple clothes.

Never operate the machine and do not repair work throngh wearing loose clothes, accessories, etc. easily to be caught on valves and machine parts.

Never wear the clothes attached with oils likely to catch a fire.

Wear protective devices.

Wear helmet, protective glasses, safety shoes, gloves, etc.

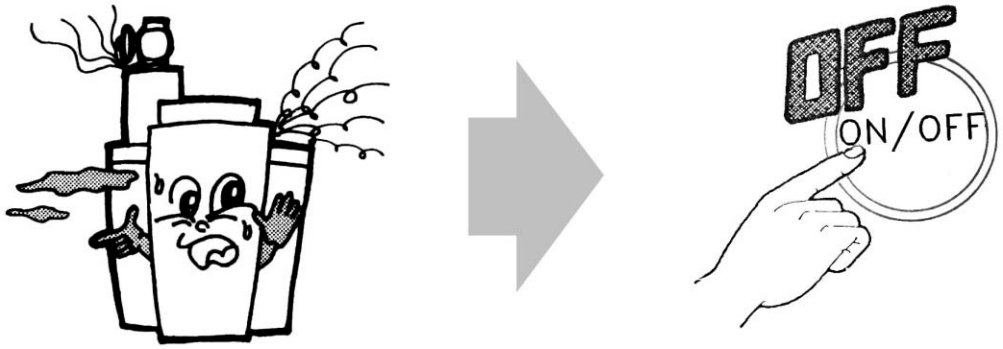
According to work. In particular, when injecting chemicals, wear protective glasses and rubber gloves so that the hands and eyes may not be in contact with them.

⚠ Warning

- When operating MIURA Boiler, observe all of the following careful matters. If not observed, personal accident may take place.

When an abnormality is found out

When an abnormality such as abnormal sound, smell, smoke, fuel leakage, etc. is found out, lock up fuel valve directly after turning operation S/W as “OFF”. A danger such as a fire or a blast may take place.

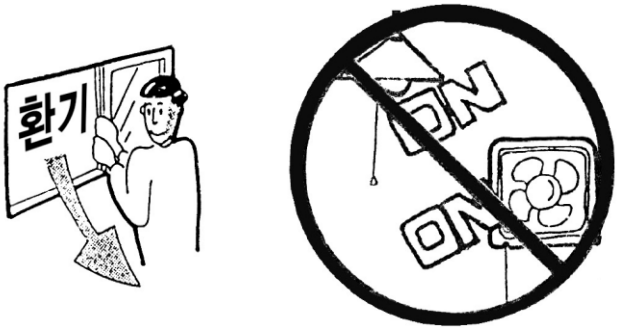


Abnormality handling

Observe the instruction of our company on abnormality handling. Never use the machine in the state that the cause for abnormality has not been removed fully, which may lead to dangerous fire, blast, etc.

Inflammables or use of fire strictly prohibited with a gas leak

Open the windows or doors and let some fresh air in.
Do not use switch on ventilation fan, can cause explosion



⚠ Warning

Careful matters when using the boiler

Use designated fuel.

In case of using other fuel than designated one a blast may take place.

Strict separation of boiler fuel from inflammable substances

In case boiler fuel is placed near inflammabl materials a fire may break out.
Never place inflammable substances near the boiler.
Never place inflammable substances inside a control box.

Use ventilation equipment (exhaust fan) when operating

When operating, make an operation together with ventilation and don't close ventilation port. Intoxication of carbon monoxide by incomplete combustion may take place.

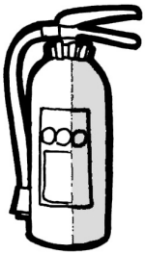
Never touch the boiler thoughtlessly when operating.

Don't touch other part than operation one when operating the machine, which may cause dangerous electric shock, scald, etc.

Preparation of fire extinguisher and emergency medicine

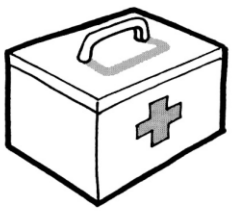
Install a fire extinguisher without fail.

In preparation for any emergency, install a fire extinguisher and understand its using method.



Prepare a box for emergency medicine.

Designate the storing place of emergency medicine box and prepare it.



⚠ Warning

- When operating MIURA Boiler, observe all of the following careful matters. If not observed, personal accident may take place.

Prohibition of remodeling without permission

Never remodel the machine.

Remodeling not recommended by our company may cause the problems in safety such as connection to related additional devices, piping. etc. In case of remodeling, consult our A/S staff in advance.

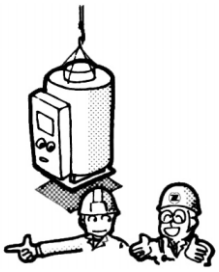
Our company is not responsible for the remodeling without our prior approval.

Request at the time of moving and resale

Please contact our company at the time of moving and resale of boiler.

For operation of boiler, a proper installation work and an optimum additional device are required. At the time of moving and resale of boiler, contact our marketing office without fail.

Other installation work and additional device connection than those designated by us are prone to cause personal accident so you had better not do that for the safety.

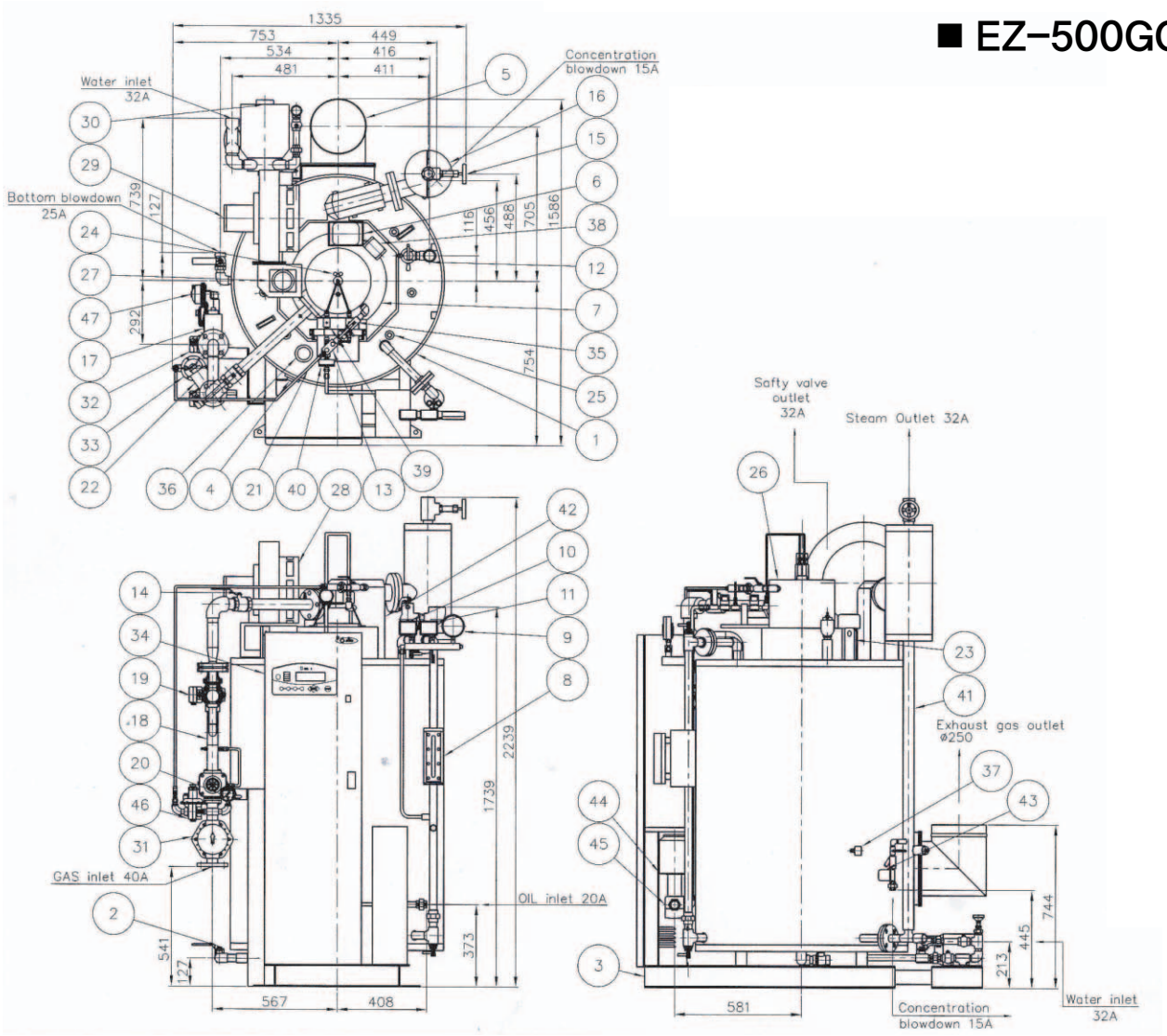


At the time of resale attach the manual.

Since the manual is required for boiler operation, hand over it to enduser together at the time of resale.

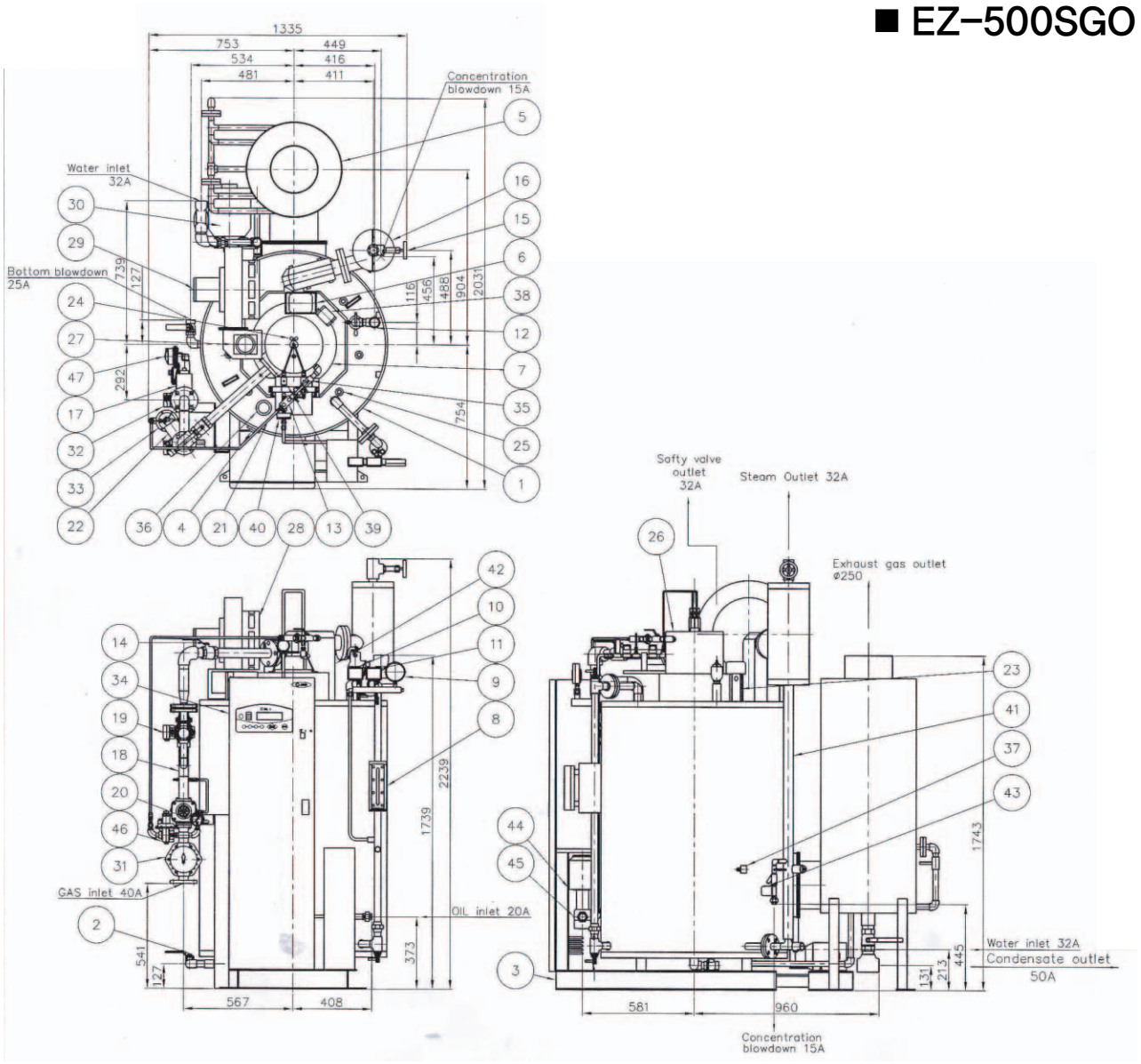
IV Title of each part

■ EZ-500GO



No	Description	Qt'y	No	Description	Qt'y	No	Description	Qt'y
1	Boiler body	1	17	Electronic V/V (1)	1	33	Pilot governer	1
2	Ball V/V	1	18	Main gas line	1	34	Control box	1
3	Bed	1	19	Gas pressure switch	1	35	Pilot Gas V/V	1
4	Inspection hole	2	20	Gas pressure gauge	1	36	Inspection hole(up)	1
5	Chimney	1	21	Pilot gas line	1	37	Exhaust Gas thermostat	1
6	Transformer	1	22	Electronic V/V (2)	1	38	Transformer	1
7	Wind box	1	23	Carry rod	2	39	Electronic V/V	3
8	Water level gauge	1	24	Flame detect hole	1	40	Oil pressure gauge	1
9	Steam pressure gauge	1	25	Guide pipe	7	41	Water line	1
10	Steam pressure S/W	1	26	Burner	1	42	Steam outlet pipe cover	1
11	Steam pressure S/W	1	27	Damper motor	1	43	Electronic V/V	1
12	Safety V/V	1	28	Blower	1	44	Oil pump motor	1
13	Combination V/V	1	29	Blower motor	1	45	Oil pump	1
14	Main Gas V/V	1	30	Water feed pump	1	46	Gas pressure switch	1
15	Main Steam V/V	1	31	Gas strainer	1	47	Electronic V/V (3)	1
16	Separator	1	32	Gas pressure switch	1			

■ EZ-500SGO



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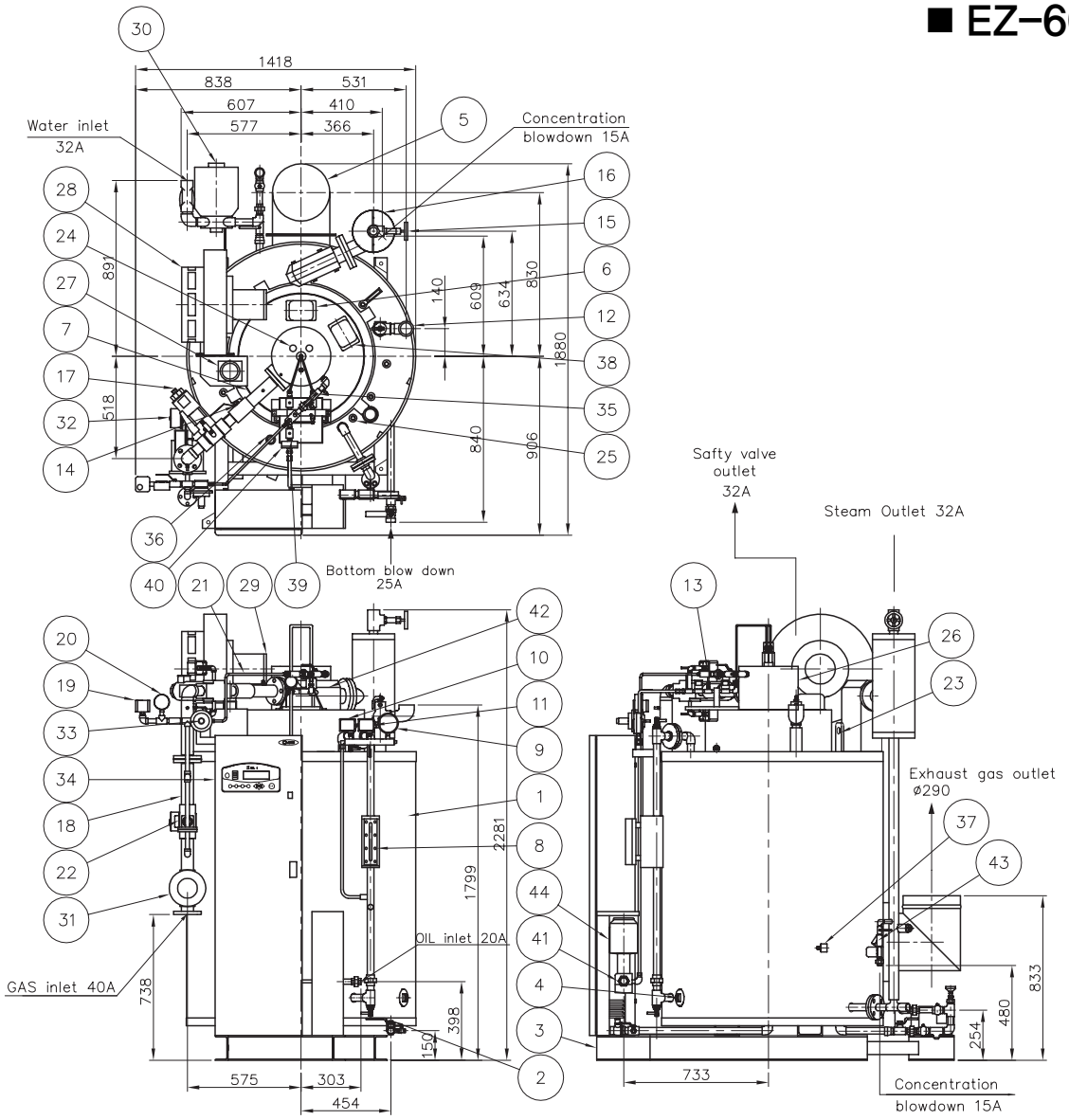
2	Ball V/V	1	18	Main gas line	1	34	Control box	1
3	Bed	1	19	Gas pressure switch	1	35	Pilot Gas V/V	1
4	Inspection hole	2	20	Gas pressure gauge	1	36	Inspection hole	1
5	Economizer	1	21	Pilot gas line	1	37	Exhaust gas thermostat	1
6	Transformer	1	22	Electronic V/V (2)	1	38	Transformer	1
7	Wind box	1	23	Carry rod	2	39	Electronic V/V	3
8	Water level gauge	1	24	Flame detect hole	1	40	Oil pressure gauge	1
9	Steam pressure gauge	1	25	Guide pipe	7	41	Water line	1
10	Steam pressure S/W	1	26	Burner	1	42	Steam outlet pipe cover	1
11	Steam pressure S/W	1	27	Damper motor	1	43	Electronic V/V	1
12	Safety V/V	1	28	Blower	1	44	Oil pump motor	1
13	Combination V/V	1	29	Blower motor	1	45	Oil pump	1
14	Main Gas V/V	1	30	Water feed pump	1	46	Gas pressure switch	1
15	Main Steam V/V	1	31	Gas strainer	1	47	Electronic V/V (3)	1
16	Separator	1	32	Gas pressure switch	1			

■ EZ-600GO



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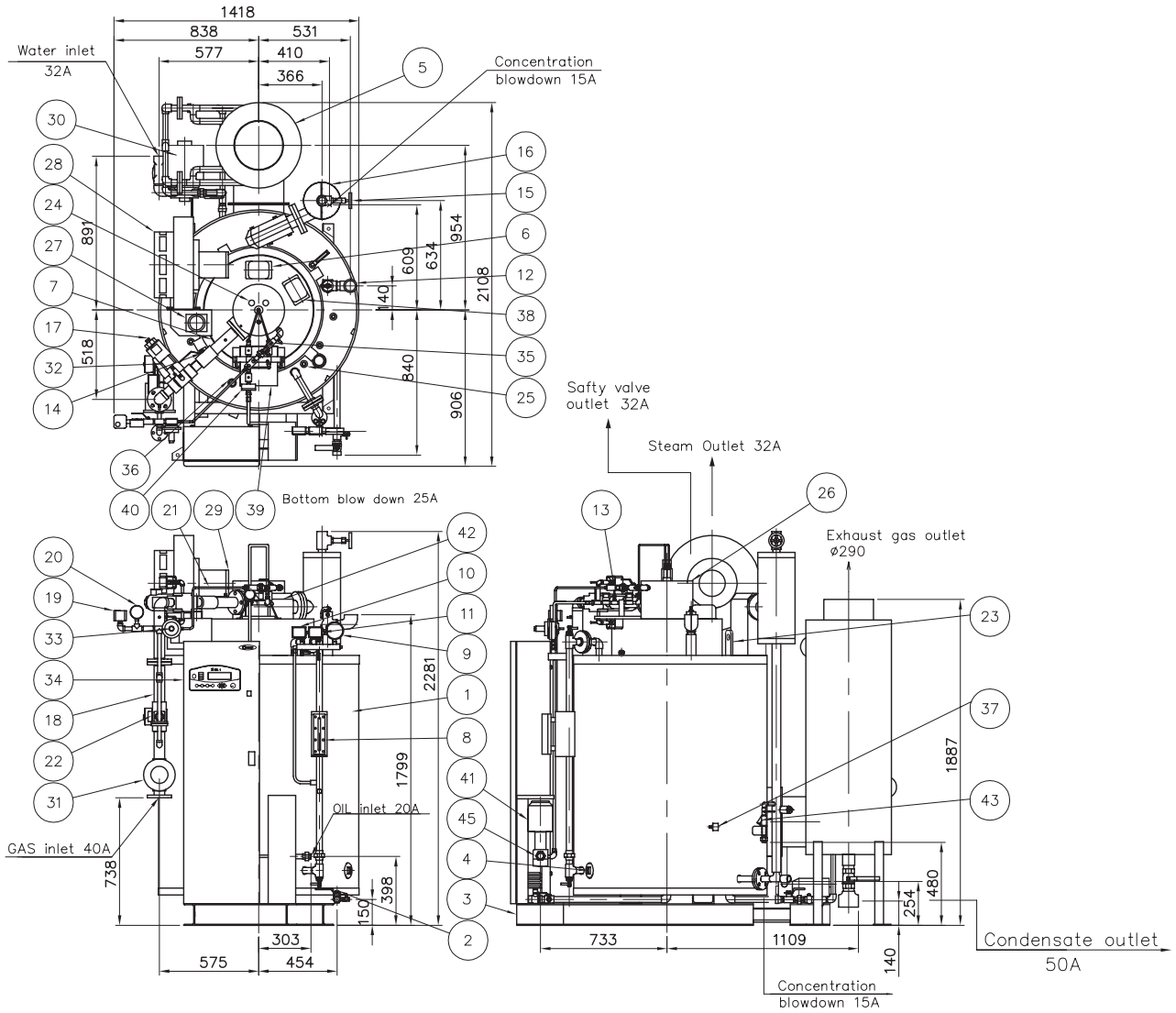
4	Inspection hole	2	20	Gas pressure gauge	1	36	Inspection hole	1
5	Chimney	1	21	Pilot Gas line	1	37	Exhaust Gas thermostat	1
6	Transformer	1	22	Electronic V/V	1	38	Transformer	1
7	Wind box	1	23	Carry rod	2	39	Electronic V/V	3
8	Water level gauge	1	24	Flame detect hole (1)	1	40	Oil pressure gauge	1
9	Steam pressure gauge	1	25	Guide pipe	7	41	Oil pump	1
10	Steam pressure S/W	1	26	Burner	1	42	Steam outlet pipe cover	1
11	Steam pressure S/W	1	27	Damper motor	1	43	Electronic V/V	1
12	Safety V/V	1	28	Blower	1	44	Oil pump motor	1
13	Combination V/V	1	29	Blower motor	1			
14	Main Gas V/V	1	30	Water feed pump	1			
15	Main Steam V/V	1	31	Gas strainer	1			
16	Separator	1	32	Gas pressure S/W	1			

■ EZ-600SGO



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4	Inspection hole	2	20	Gas pressure gauge	1	36	Inspection hole	1
5	Chimney	1	21	Pilot Gas line	1	37	Exhaust Gas thermostat	1
6	Transformer	1	22	Electronic V/V	1	38	Transformer	1
7	Wind box	1	23	Carry rod	2	39	Oil seat	3
8	Water level gauge	1	24	Flame detect hole (1)	1	40	Oil pressure gauge	1
9	Steam pressure gauge	1	25	Guide pipe	7	41	Water line	1
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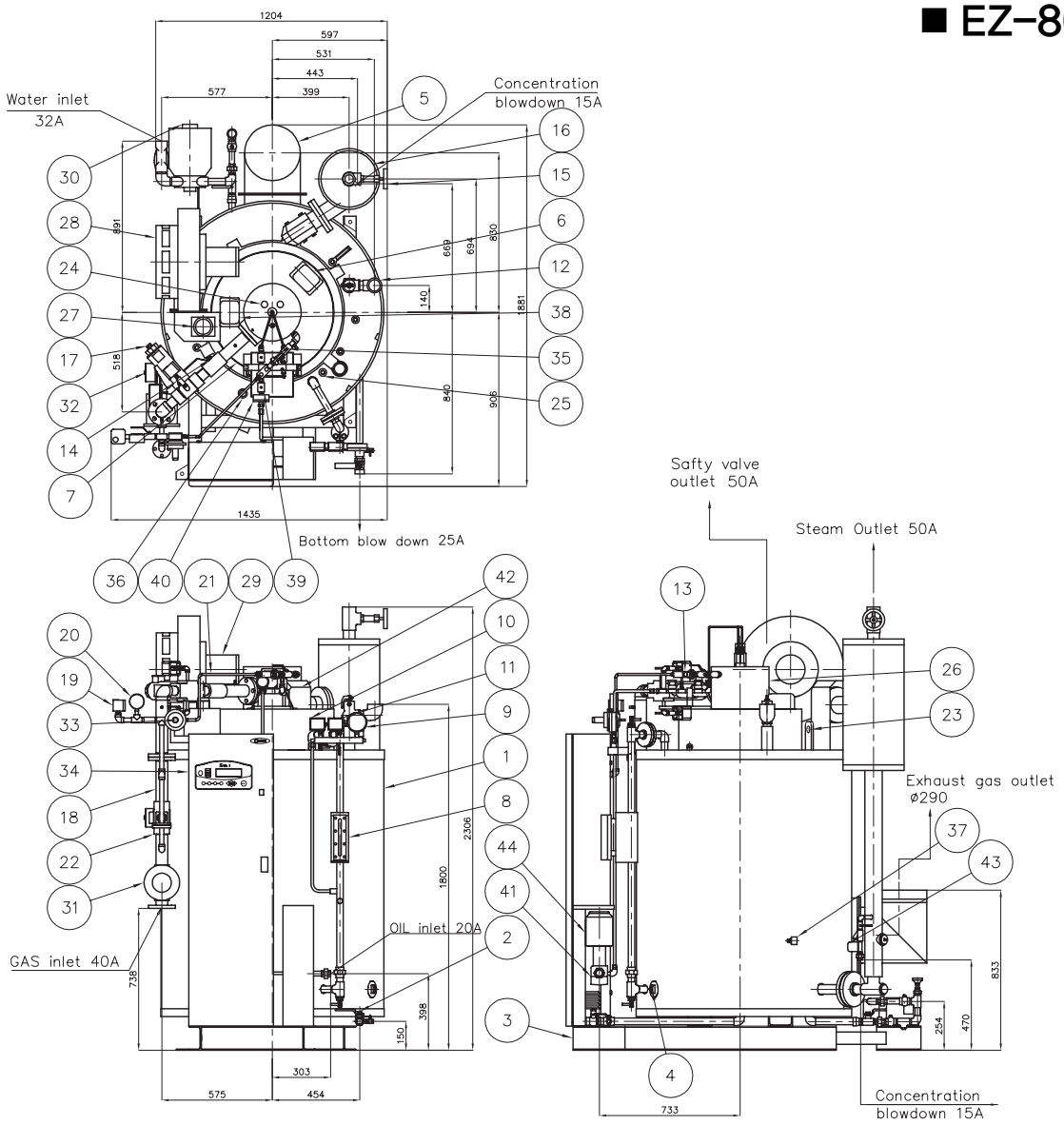
12	Safety V/V	1	28	Blower	1	44	Oil pump motor	1
13	Combination V/V	1	29	Blower motor	1			
14	Main Gas V/V	1	30	Water feed pump	1			
15	Main Steam V/V	1	31	Gas strainer	1			
16	Separator	1	32	Gas pressure switch	1			

■ EZ-800GO



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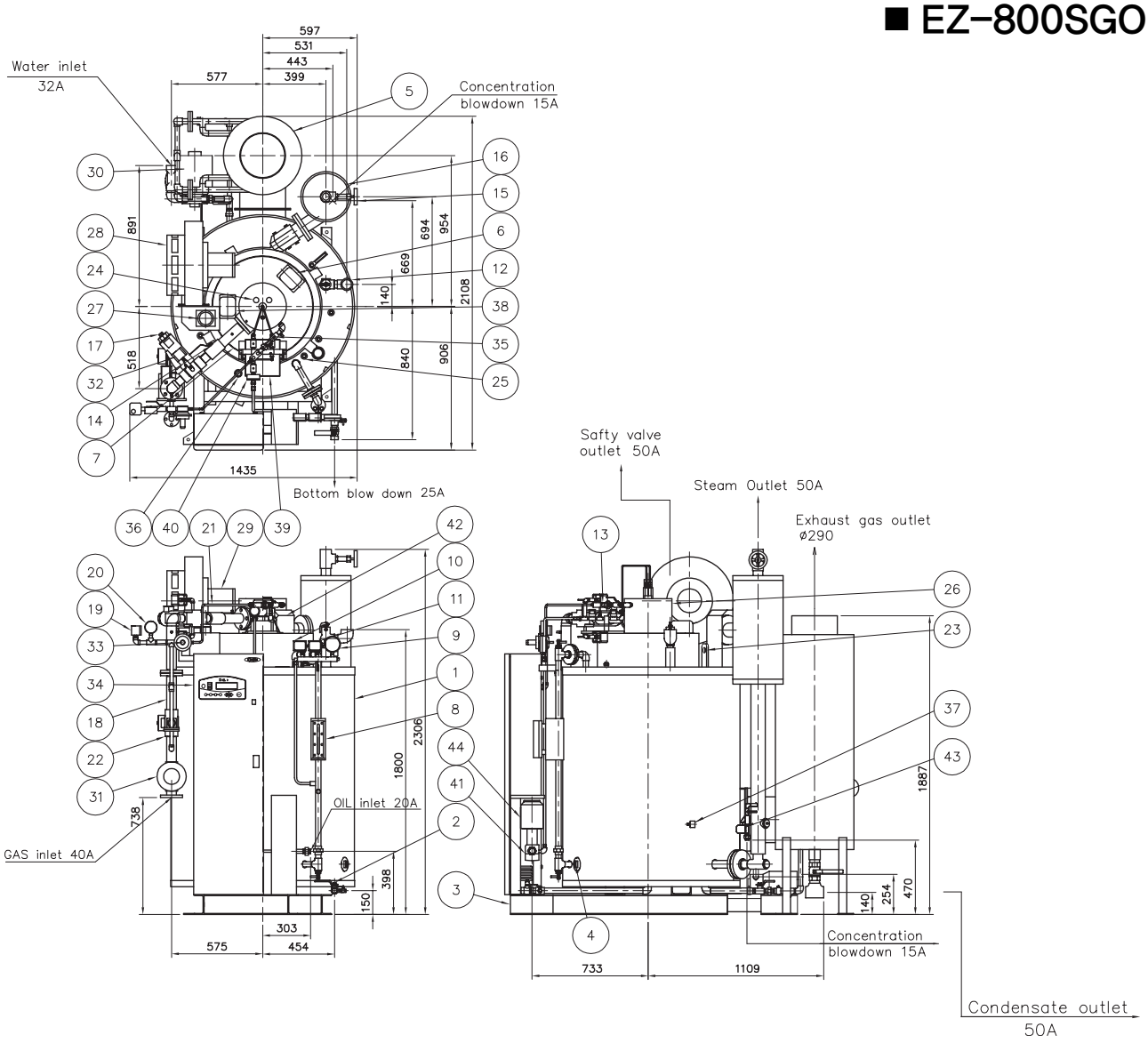
4	Inspection hole	2	20	Gas pressure gauge	1	36	Inspection hole	1
5	Chimney	1	21	Pilot Gas line	1	37	Exhaust Gas thermostat	1
6	Transformer	1	22	Electronic V/V	1	38	Transformer	1
7	Wind box	1	23	Carry rod	2	39	Electronic V/V	3
8	Water level gauge	1	24	Flame detect hole (1)	1	40	Oil pressure gauge	1
9	Steam pressure gauge	1	25	Guide pipe	7	41	Oil pump	1
10	Steam pressure S/W	1	26	Burner	1	42	Steam outlet pipe cover	1
11	Steam pressure S/W	1	27	Damper motor	1	43	Electronic V/V	1
12	Safety V/V	1	28	Blower	1	44	Oil pump motor	1
13	Combination V/V	1	29	Blower motor	1			
14	Main Gas V/V	1	30	Water feed pump	1			
15	Main Steam V/V	1	31	Gas strainer	1			
16	Separator	1	32	Gas pressure switch	1			

■ EZ-800SGO



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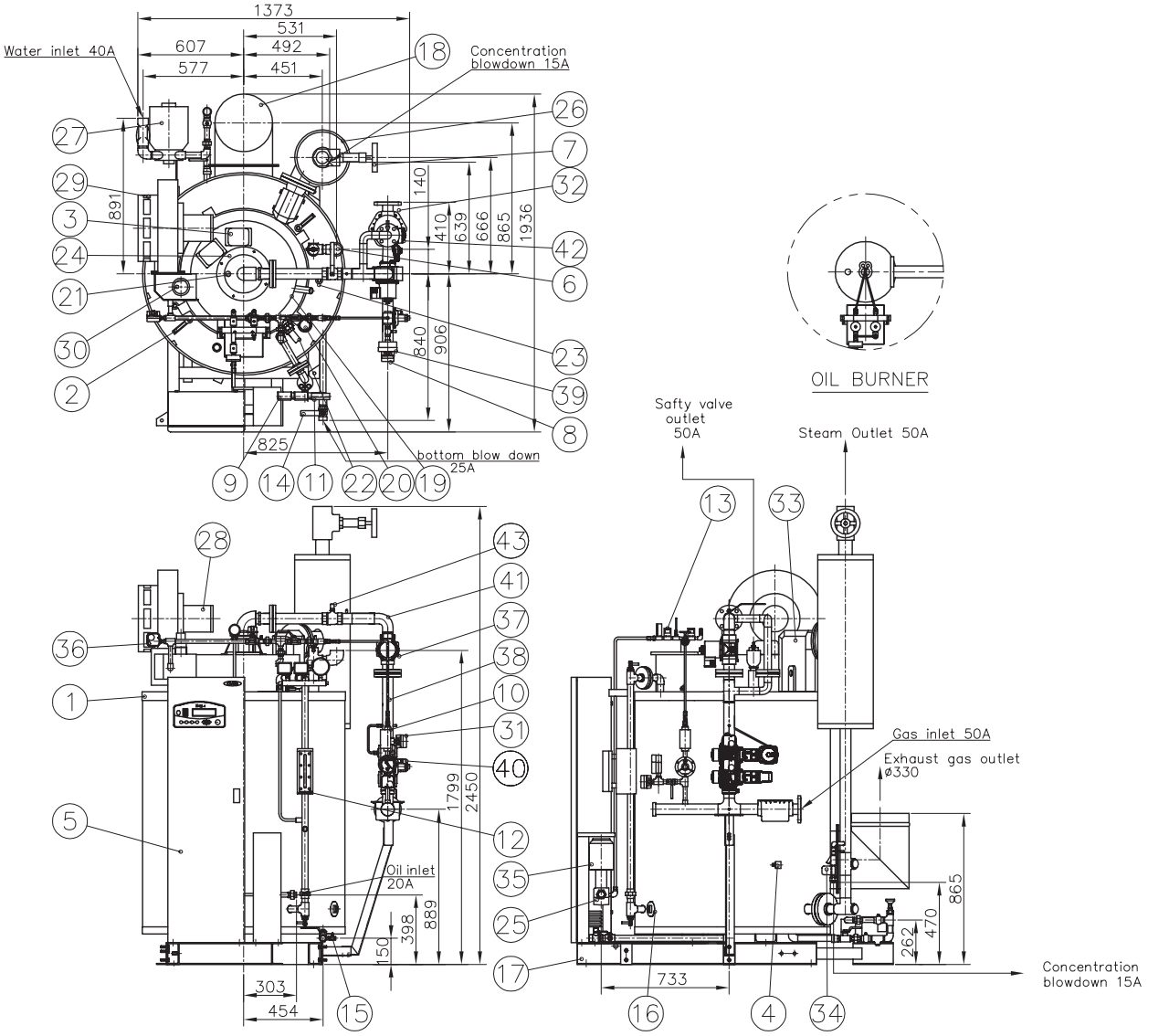
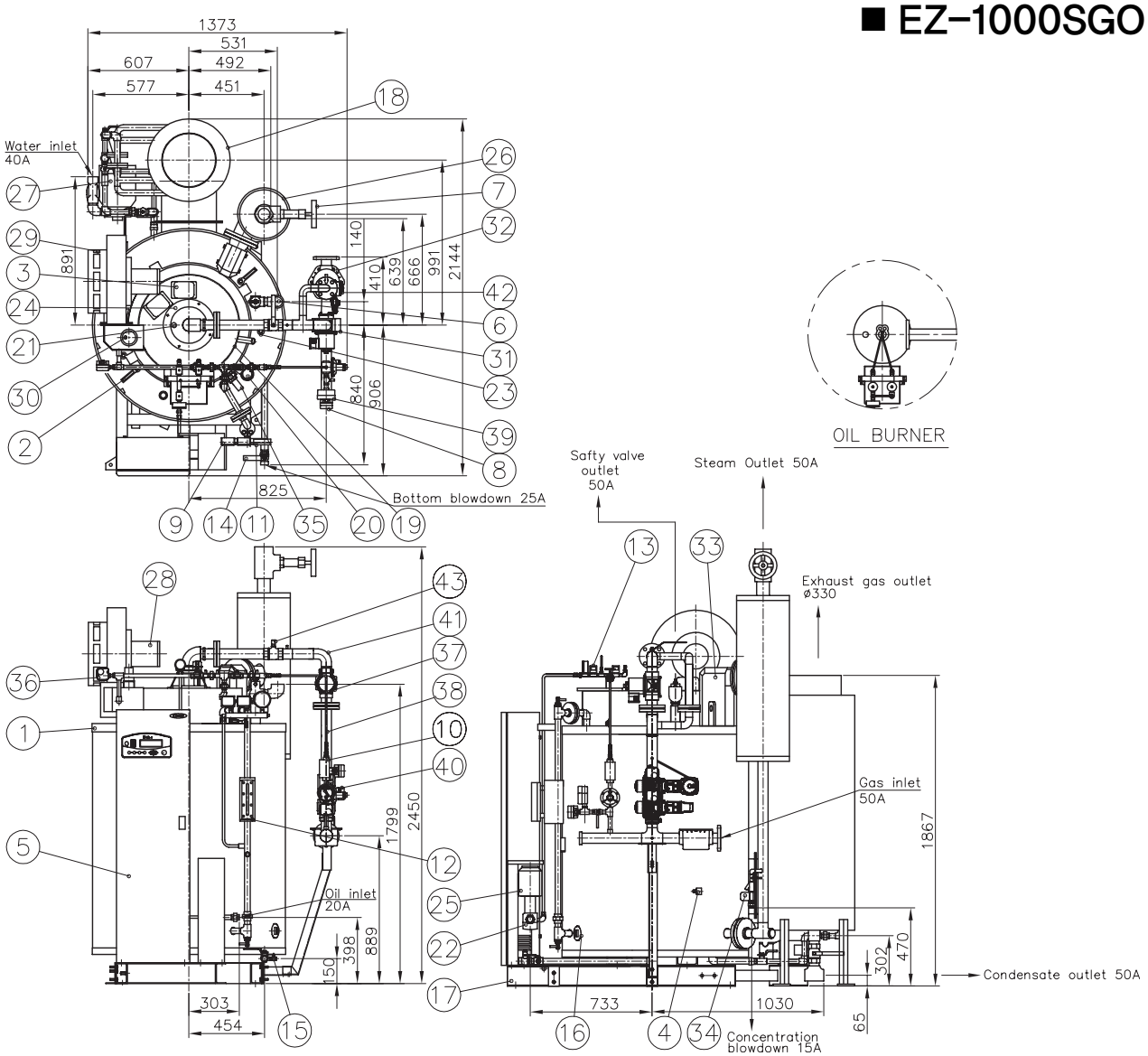
2	Ball V/V	1	18	Main Gas line	1	34	Control box	1
3	Bed	1	19	Gas pressure switch	1	35	Pilot Gas V/V	1
4	Inspection hole	2	20	Gas pressure gauge	1	36	Inspection hole	1
5	Chimney	1	21	Pilot gas line	1	37	Exhaust gas thermostat	1
6	Transformer	1	22	Electronic V/V	1	38	Transformer	1
7	Wind box	1	23	Carry rod	2	39	Electronic V/V	3
8	Water level gauge	1	24	Flame detect hole (1)	1	40	Oil pressure gauge	1
9	Steam pressure gauge	1	25	Guide pipe	7	41	Oil line	1
10	Steam pressure S/W	1	26	Burner	1	42	Steam outlet pipe cover	1
11	Steam pressure S/W	1	27	Damper motor	1	43	Electronic V/V	1
12	Safety V/V	1	28	Blower	1	44	Oil pump motor	1
13	Combination V/V	1	29	Blower motor	1			
14	Main Gas V/V	1	30	Water feed pump	1			
15	Main Steam V/V	1	31	Gas strainer	1			
16	Separator	1	32	Gas pressure S/W	1			

■ EZ-1000GO



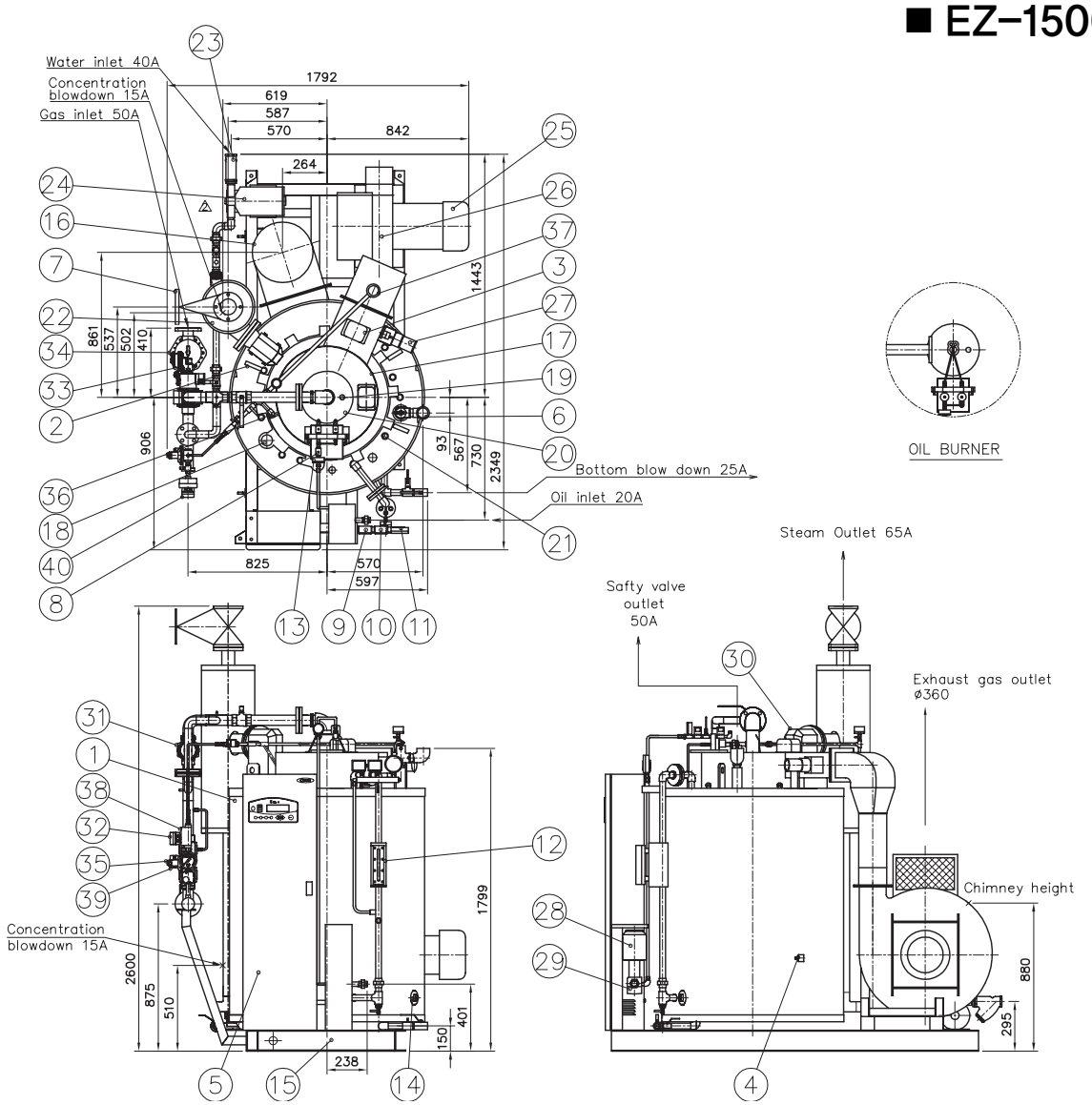
No	Description	Qt'y	No	Description	Qt'y	No	Description	Qt'y
1	Boiler body	1	17	Bed	1	33	Steam outlet pipe cover	1
2	Carry rod	2	18	Chimney	1	34	Electronic V/V	1
3	Transformer	2	19	Wind box	1	35	Oil pump motor	1
4	Exhaust gas thermostat	1	20	Inspection hole(up)	1	36	Wind pressure S/W	1
5	Control box	1	21	Flame detect hole (1)	1	37	Electronic V/V (3)	1
6	Safety V/V	1	22	Pilot burner	1	38	Pilot Gas line	1
7	Main Steam V/V	1	23	Guide pipe	7	39	Gas pressure gauge	1
8	Gas pressure switch	1	24	Burner	1	40	Gas pressure S/W	1
9	Steam pressure switch	2	25	Oil pump	1	41	Main gas line	1
10	Combination V/V	1	26	Separator	1	42	Electronic V/V (1) (2)	1
11	Steam pressure gauge	1	27	Water feed pump	1	43	Main gas V/V	1
12	Water level gauge	1	28	Blower motor	1			
13	Electronic V/V	3	29	Blower	1			
14	Ball V/V	1	30	Damper motor	1			
15	Ball V/V	1	31	Gas pressure switch	1			
16	Inspection hole	2	32	Gas strainer	1			

■ EZ-1000SGO



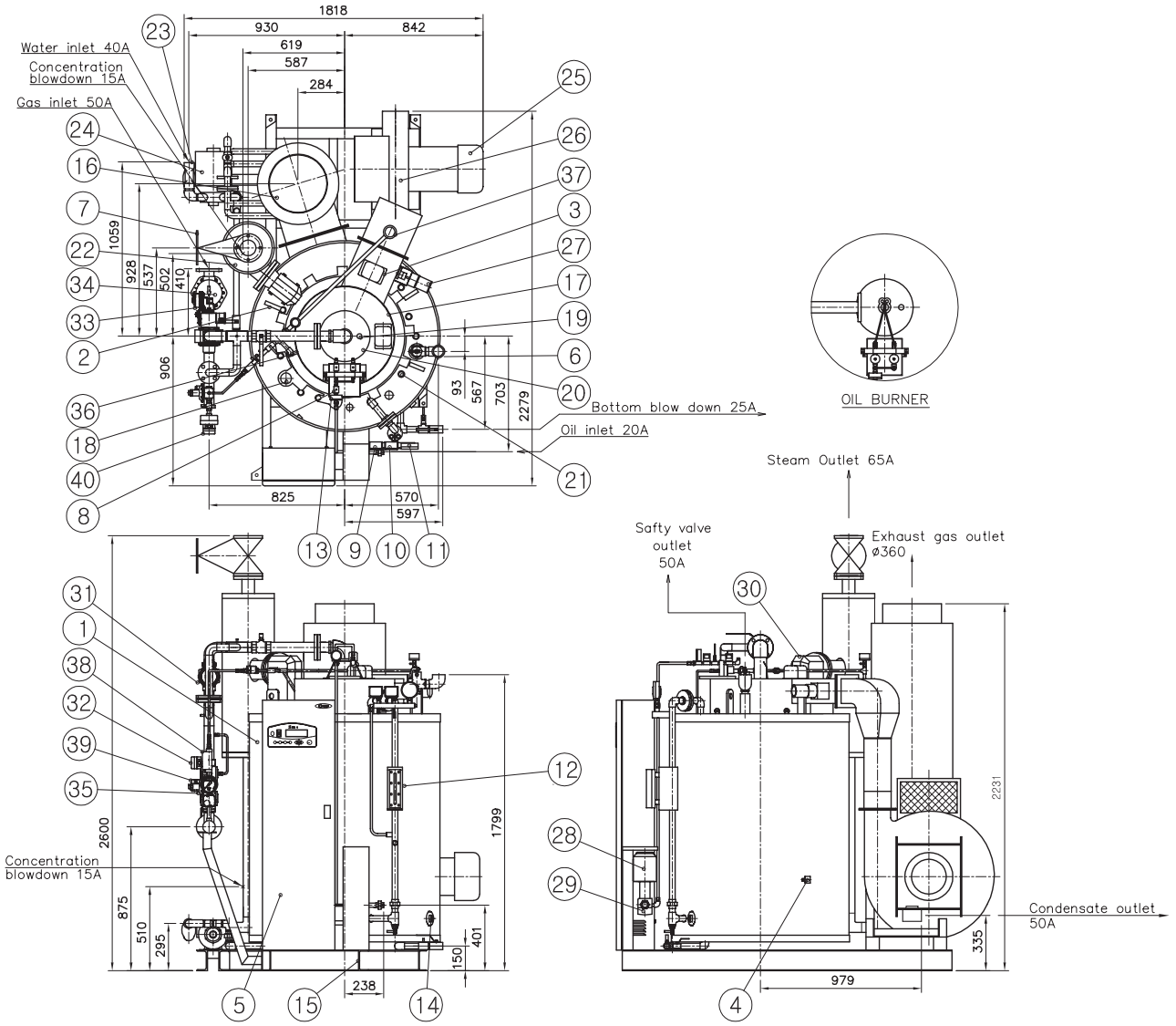
No	Description	Qt'y	No	Description	Qt'y	No	Description	Qt'y
1	Boiler body	1	17	Bed	1	33	Steam outlet pipe cover	1
2	Carry rod	2	18	Chimney	1	34	Electronic V/V	1
3	Transformer	2	19	Wind box	1	35	Pilot burner	1
4	Exhaust Gas thermostat	1	20	Inspection hole	1	36	Wind pressure S/W	1
5	Control box	1	21	Flame detect hole (1)	1	37	Electronic V/V (3)	1
6	Safety V/V	1	22	Flame detect	1	38	Pilot Gas line	1
7	Main Steam V/V	1	23	Guide pipe	7	39	Gas pressure gauge	1
8	Gas pressure switch	1	24	Burner	1	40	Gas pressure S/W	1
9	Steam pressure S/W	2	25	Oil pump motor	1	41	Main gas line	1
10	Combination V/V	1	26	Separator	1	42	Electronic V/V (1) (2)	1
11	Steam pressure gauge	1	27	Water feed pump	1	43	Main Gas V/V	1
12	Water level gauge	1	28	Blower motor	1			
13	Electronic V/V	3	29	Blower	1			
14	Ball V/V	1	30	Damper motor	1			
15	Ball V/V	1	31	Gas pressure switch	1			
16	Inspection hole	2	32	Gas strainer	1			

■ EZ-1500GO



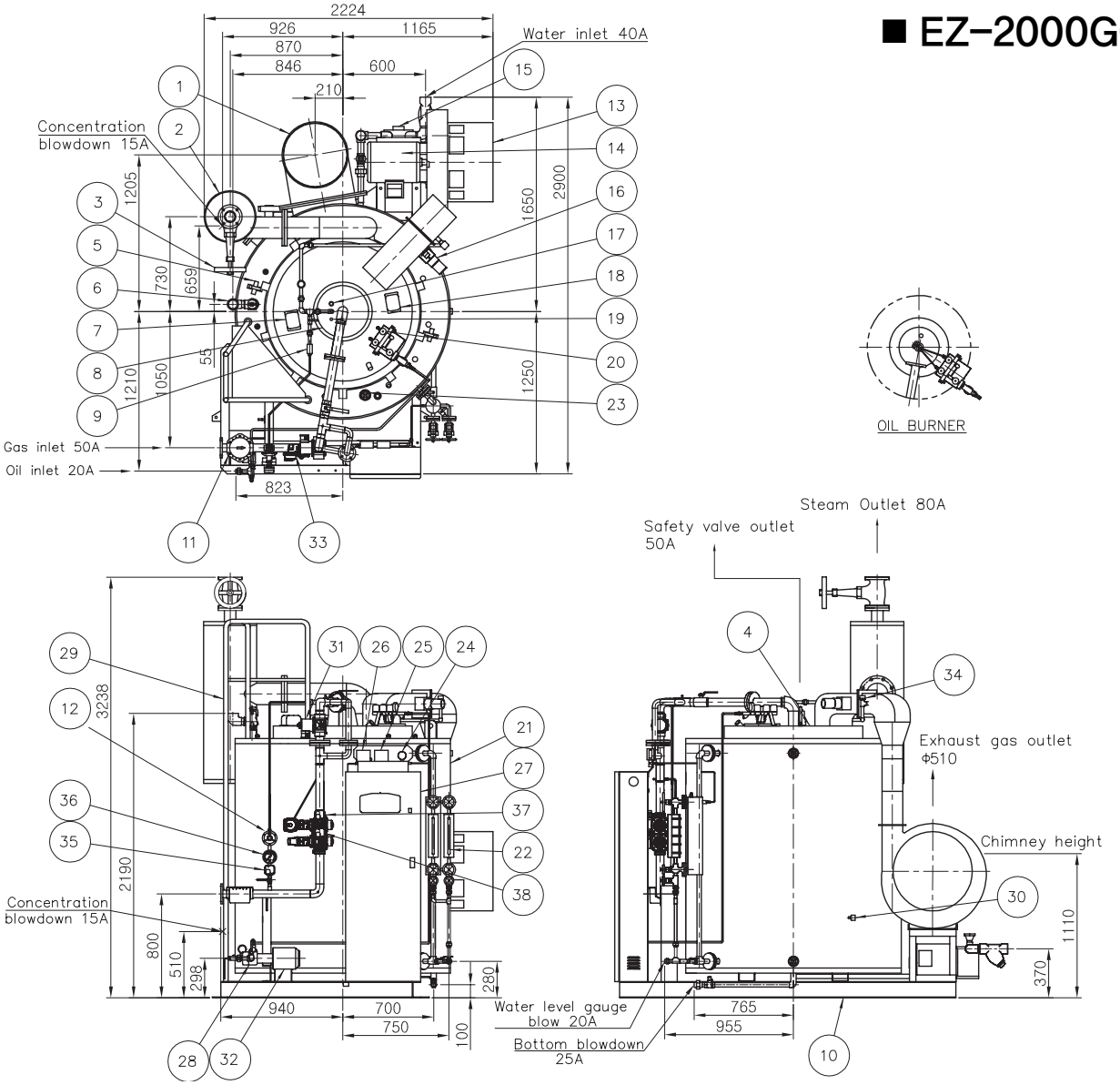
No	Description	Qt'y	No	Description	Qt'y	No	Description	Qt'y
1	Boiler body	1	17	Wind box	1	33	Electronic V/V (1) (2)	1
2	Carry rod	3	18	Inspection hole	1	34	Gas strainer	1
3	Transformer	2	19	Flame detect hole	1	35	Pilot governer	1
4	Exhaust gas thermostat	1	20	Burner	1	36	Pilot burner	1
5	Control box	1	21	Guide pipe	8	37	Wind pressure S/W	1
6	Safety V/V	1	22	Water strainer	1	38	Combination V/V	1
7	Main Steam V/V	1	23	Separator	1	39	Gas pressure S/W	1
8	Gas pressure S/W	3	24	Water feed pump	1	40	Gas pressure S/W	1
9	Steam pressure S/W	1	25	Blower motor	1			
10	Steam pressure S/W	1	26	Blower	1			
11	Steam pressure gauge	1	27	Damper motor	1			
12	Water level gauge	1	28	Oil pump motor	1			
13	Oil pressure gauge	1	29	Oil pump	1			
14	Inspection hole	2	30	Steam outlet pipe cover	1			
15	Bed	1	31	Electronic V/V (3)	1			
16	Chimney	1	32	Gas pressure S/W	1			

■ EZ-1500SGO



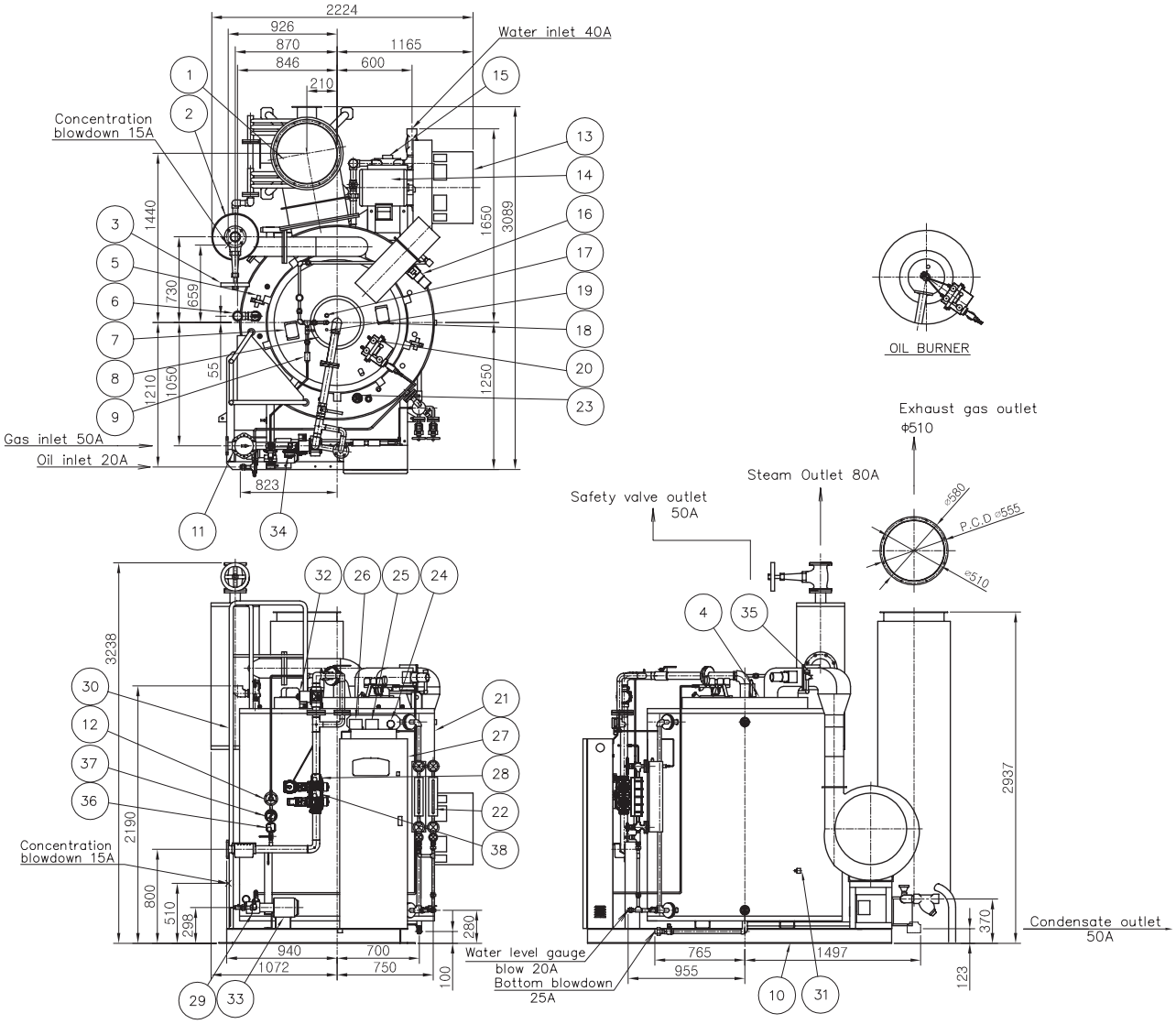
No	Description	Qt'y	No	Description	Qt'y	No	Description	Qt'y
1	Boiler body	1	17	Wind box	1	33	Electronic V/V (1) (2)	1
2	Carry rod	3	18	Inspection hole	1	34	Gas strainer	1
3	Transformer	2	19	Flame detect hole	1	35	Pilot governer	1
4	Exhaust gas thermostat	1	20	Burner	1	36	Pilot Burner	1
5	Control box	1	21	Guide pipe	8	37	Wind pressure S/W	1
6	Safety V/V	1	22	Separator	1	38	Combination V/V	1
7	Main Steam V/V	1	23	Water strainer	1	39	Gas pressure S/W	1
8	Electronic V/V	3	24	Water feed pump	1	40	Gas pressure S/W	1
9	Steam pressure S/W	1	25	Blower motor	1			
10	Steam pressure S/W	1	26	Blower	1			
11	Steam pressure gauge	1	27	Damper motor	1			
12	Water level gauge	1	28	Oil pump motor	1			
13	Oil pressure gauge	1	29	Oil pump	1			
14	Inspection hole	2	30	Steam outlet pipe cover	1			
15	Bed	1	31	Electronic V/V (3)	1			
16	Economizer	1	32	Gas pressure S/W	1			

■ EZ-2000GO



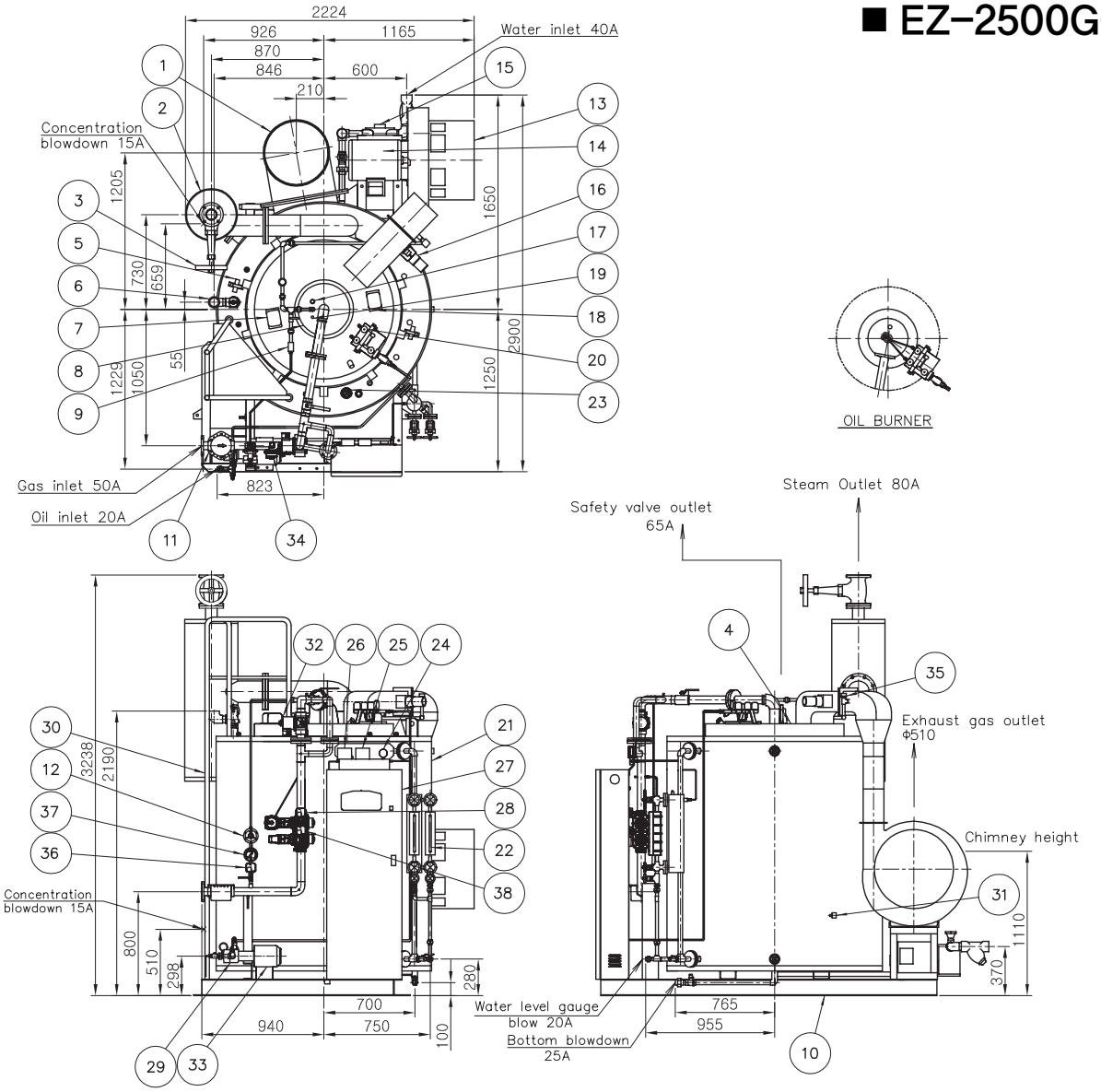
No	Description	Qt'y	No	Description	Qt'y	No	Description	Qt'y
0	Boiler Assembly	1	16	Damper motor	1	32	Oil pump motor	1
1	Chimney	1	17	Flame detector	1	33	Electronic V/V (1) (2)	1
2	Seperator	1	18	Transformer	1	34	Wind pressure S/W	1
3	Main steam V/V	1	19	Flame detect hole	1	35	Gas pressure S/W	1
4	Wind box	1	20	Electronic V/V	3	36	Gas pressure gauge	1
5	Carry rod	2	21	Boiler body	1	37	Gas pressure S/W	1
6	Safety V/V	1	22	Water level gauge	2	38	Gas pressure S/W	1
7	Transformer	1	23	Inspection hole	3			
8	Burner	1	24	Steam pressure gauge	1			
9	Pilot Gas V/V	1	25	Steam pressure S/W	1			
10	Bed	1	26	Steam pressure S/W	1			
11	Gas strainer	1	27	Control box	1			
12	Pilot governer	1	28	Oil pump	1			
13	Blower	1	29	Ladder	1			
14	Blower motor	1	30	Exhaust Gas thermostat	1			
15	Water feed pump	1	31	Electronic V/V (3)	1			

■ EZ-2000SGO



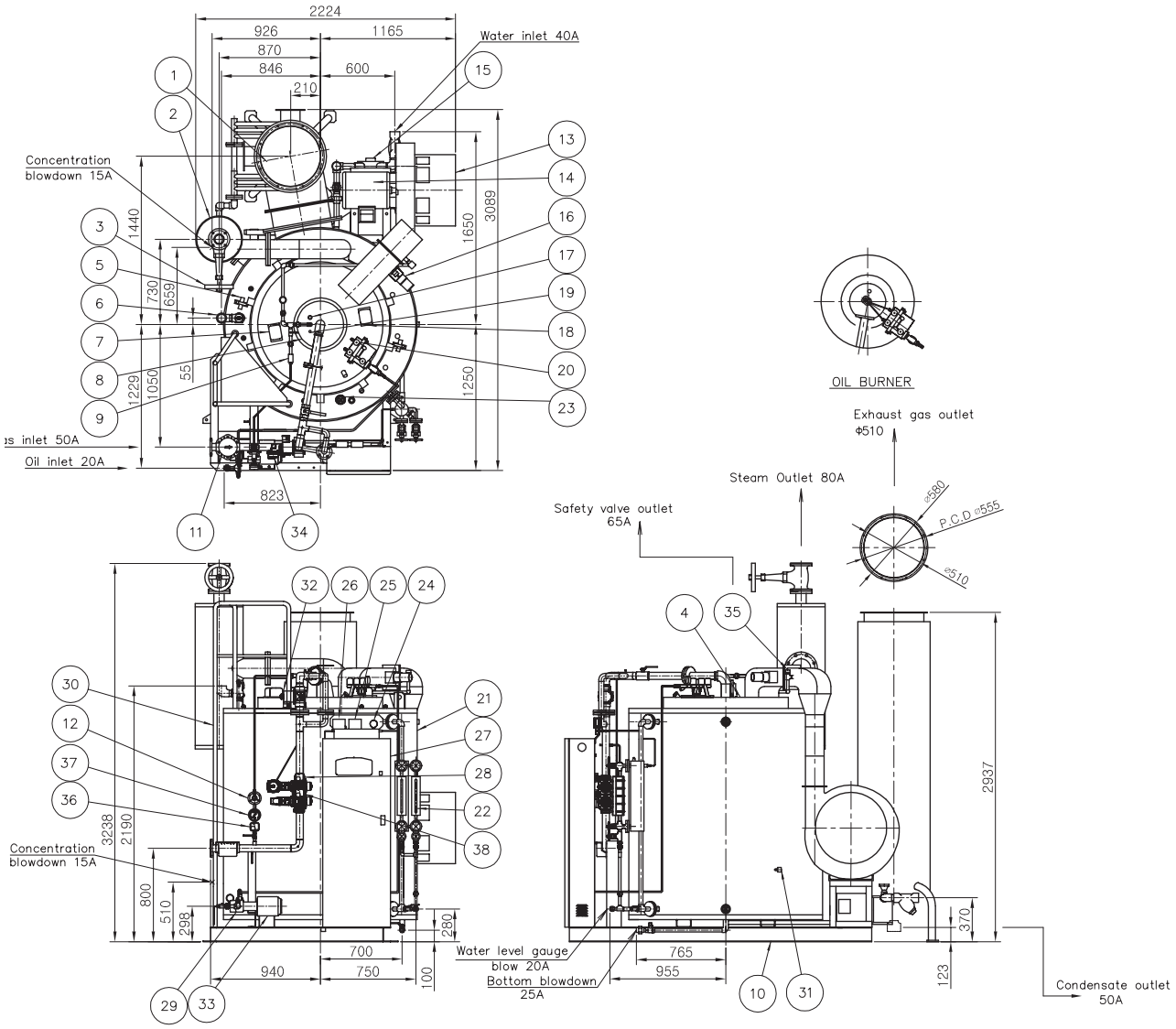
No	Description	Qt'y	No	Description	Qt'y	No	Description	Qt'y
0	Boiler Assembly	1	16	Damper motor	1	32	Electronic V/V (3)	1
1	Economizer	1	17	Flame detector	1	33	Oil pump motor	1
2	Seperator	1	18	Transformer	1	34	Electronic V/V (1) (2)	1
3	Main steam V/V	1	19	Flame detect hole	1	35	Wind pressure S/W	1
4	Wind box	1	20	Electronic V/V	3	36	Gas pressure S/W	1
5	Carry rod	2	21	Boiler body	1	37	Gas pressure gauge	1
6	Safety V/V	1	22	Water level gauge	2	38	Gas pressure S/W	1
7	Transformer	1	23	Inspection hole	3			
8	Burner	1	24	Steam pressure gauge	1			
9	Pilot Gas V/V	1	25	Steam pressure S/W	1			
10	Bed	1	26	Steam pressure S/W	1			
11	Gas strainer	1	27	Control box	1			
12	Pilot governer	1	28	Gas pressure S/W	1			
13	Blower	1	29	Oil pump	1			
14	Blower motor	1	30	Ladder	1			
15	Water feed pump	1	31	Exhaust Gas thermostat	1			

■ EZ-2500GO



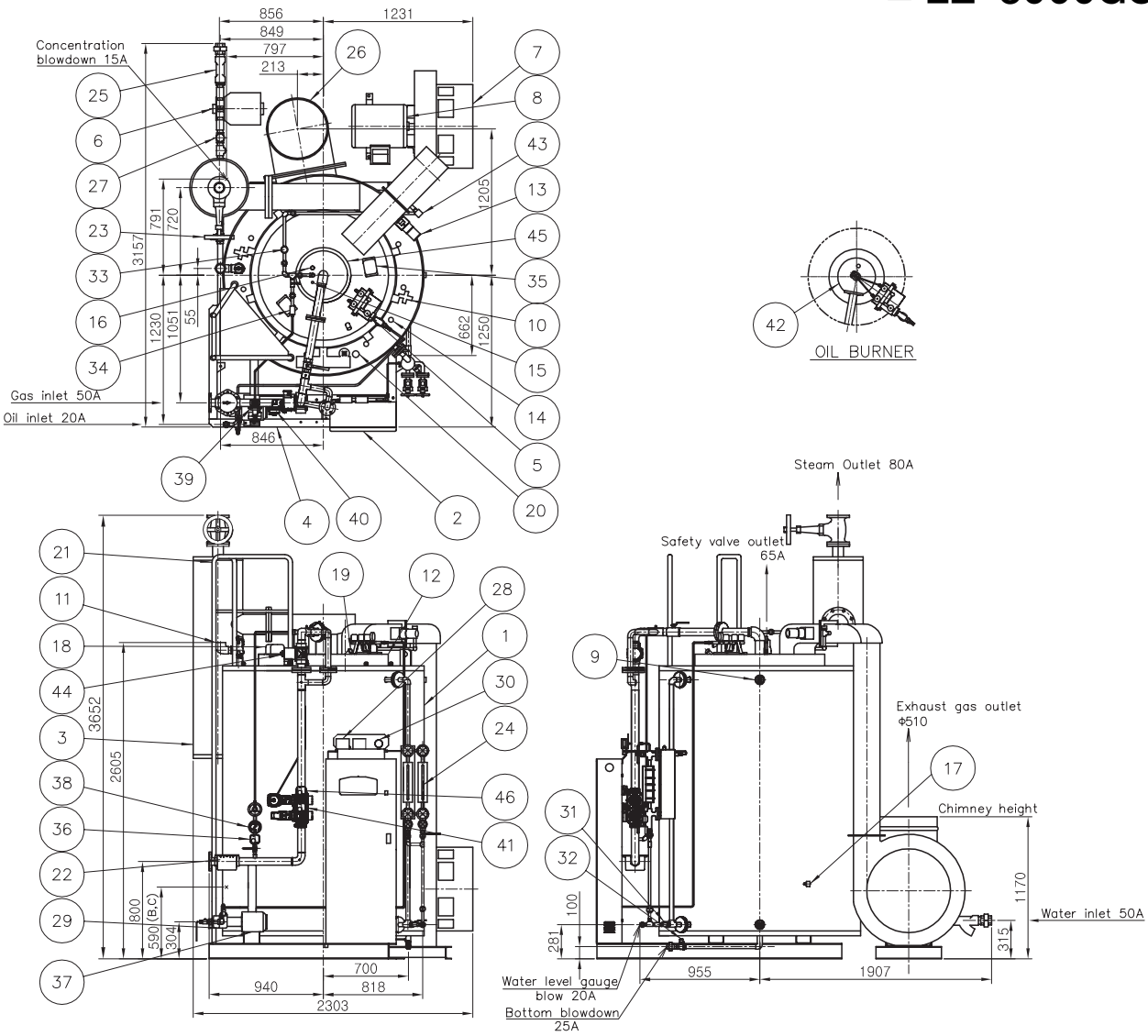
No	Description	Qt'y	No	Description	Qt'y	No	Description	Qt'y
0	Boiler Assembly	1	16	Damper motor	1	32	Electronic V/V (3)	1
1	Chimney	1	17	Flame detector	1	33	Oil pump motor	1
2	Seperator	1	18	Transformer	1	34	Electronic V/V (1) (2)	1
3	Main steam V/V	1	19	Flame detect hole	1	35	Wind pressure S/W	1
4	Wind box	1	20	Electronic V/V	3	36	Gas pressure S/W	1
5	Carry rod	2	21	Boiler body	1	37	Gas pressure gauge	1
6	Safety V/V	1	22	Water level gauge	2	38	Gas pressure S/W	1
7	Transformer	1	23	Inspection hole	3			
8	Burner	1	24	Steam pressure gauge	1			
9	Pilot Gas V/V	1	25	Steam pressure S/W	1			
10	Bed	1	26	Steam pressure S/W	1			
11	Gas strainer	1	27	Control box	1			
12	Pilot governer	1	28	Gas pressure S/W	1			
13	Blower	1	29	Oil pump	1			
14	Blower motor	1	30	Ladder	1			
15	Water feed pump	1	31	Exhaust gas thermostat	1			

■ EZ-2500SGO



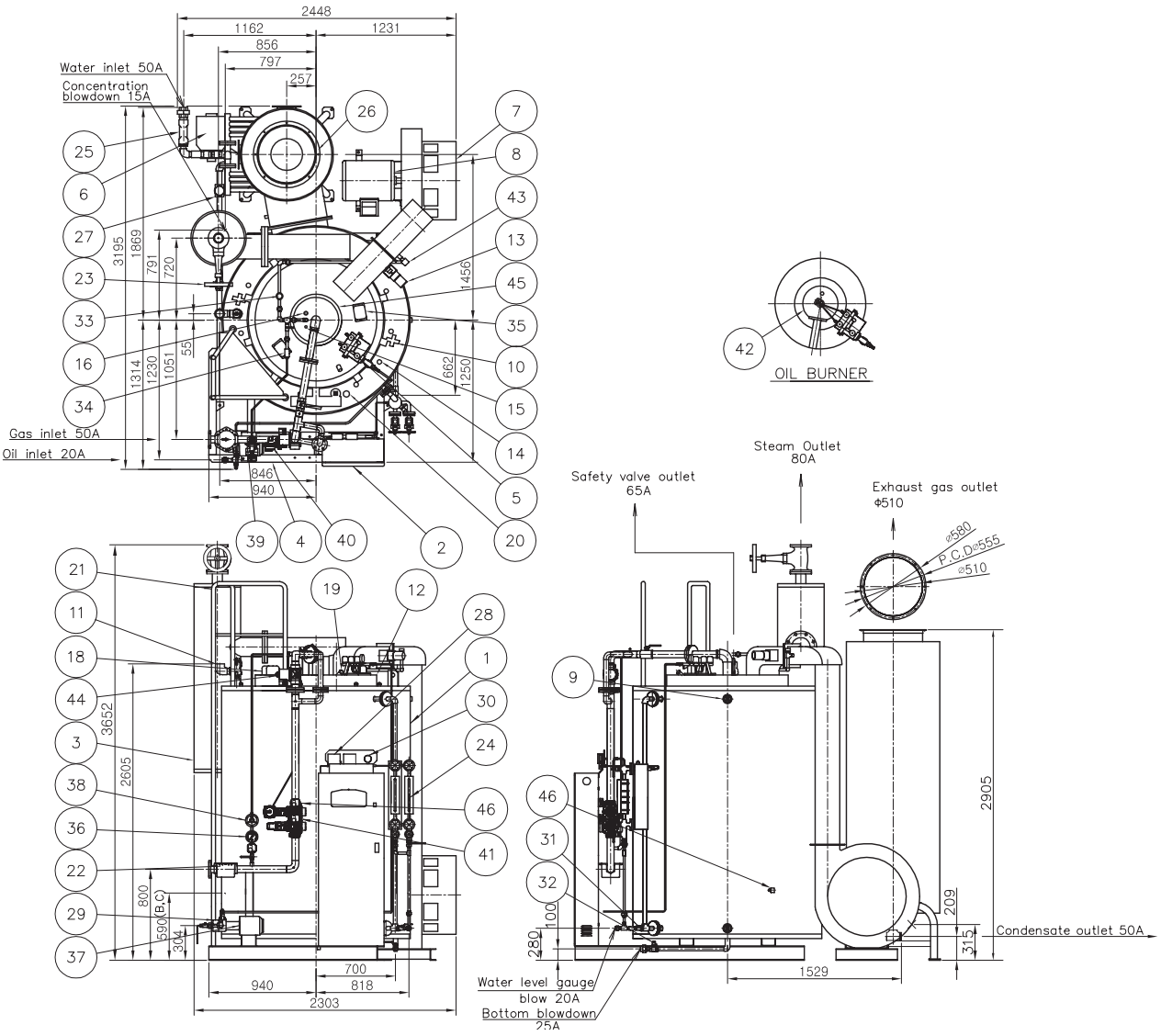
No	Description	Qt'y	No	Description	Qt'y	No	Description	Qt'y
0	Boiler Assembly	1	16	Damper motor	1	32	Electronic V/V (3)	1
1	Economizer	1	17	Flame detector	1	33	Oil pump motor	1
2	Seperator	1	18	Transformer	1	34	Electronic V/V (1) (2)	1
3	Main steam V/V	1	19	Flame detect hole	1	35	Wind pressure S/W	1
4	Wind box	1	20	Electronic V/V	3	36	Gas pressure S/W	1
5	Carry rod	2	21	Boiler body	1	37	Gas pressure gauge	1
6	Safety V/V	1	22	Water level gauge	2	38	Gas pressure S/W	1
7	Transformer	1	23	Inspection hole	3			
8	Burner	1	24	Steam pressure gauge	1			
9	Pilot Gas V/V	1	25	Steam pressure S/W	1			
10	Bed	1	26	Steam pressure S/W	1			
11	Gas strainer	1	27	Control box	1			
12	Pilot governer	1	28	Gas pressure S/W	1			
13	Blower	1	29	Oil pump	1			
14	Blower motor	1	30	Ladder	1			
15	Water feed pump	1	31	Exhaust gas thermostat	1			

■ EZ-3000GO



No	Description	Qt'y	No	Description	Qt'y	No	Description	Qt'y
0	Boiler Assembly	1	16	Flame detector	1	32	Ball V/V	1
1	Boiler body	1	17	Exhaust Gas thermostat	1	33	Niddle V/V	1
2	Control box	1	18	Transformer	1	34	Pilot Gas V/V	1
3	Seperator	1	19	Flame detect hole	1	35	Transformer	1
4	Bed	1	20	Electrode rod	1	36	Gas pressure S/W	1
5	Electronic V/V	3	21	Ladder	1	37	Oil pump motor	1
6	Water feed pump	1	22	Gas strainer	1	38	Gas pressure gauge	1
7	Blower	1	23	Main Steam V/V	1	39	Pilot governer	1
8	Blower motor	1	24	Water level gauge	1	40	Electronic V/V (1) (2)	1
9	Inspection hole	3	25	Water strainer	1	41	Gas pressure S/W	1
10	Carry rod	2	26	Carry rod	1	42	Oil burner	1
11	Safety V/V	1	27	Thermometer	1	43	Wind pressure S/W	1
12	Wind box	1	28	Steam pressure S/W	2	44	Electronic V/V (3)	1
13	Damper motor	1	29	Oil pump	1	45	Gas burner	1
14	Guide pipe	10	30	Steam pressure gauge	1	46	Gas pressure S/W	1
15	Flame detect hole	1	31	Ball V/V	1			

■ EZ-3000SGO



No	Description	Qt'y	No	Description	Qt'y	No	Description	Qt'y
0	Boiler Assembly	1	16	Flame detector	1	32	Ball V/V	1
1	Boiler body	1	17	Exhaust Gas thermostat	1	33	Niddle V/V	1
2	Control box	1	18	Transformer	1	34	Pilot Gas V/V	1
3	Seperator	1	19	Flame detect hole	1	35	Transformer	1
4	Bed	1	20	Electrode rod	1	36	Gas pressure S/W	1
5	Electronic V/V	3	21	Ladder	1	37	Oil pump motor	1
6	Water feed pump	1	22	Gas strainer	1	38	Gas pressure gauge	1
7	Blower	1	23	Main Steam V/V	1	39	Pilot governer	1
8	Blower motor	1	24	Water level gauge	1	40	Electronic V/V (1) (2)	1
9	Inspection hole	3	25	Water strainer	1	41	Gas pressure S/W	1
10	Carry rod	2	26	Economizer	1	42	Oil burner	1
11	Safety V/V	1	27	Thermometer	1	43	Wind pressure S/W	1
12	Wind box	1	28	Steam pressure S/W	2	44	Electronic V/V (3)	1
13	Damper motor	1	29	Oil pump	1	45	Gas burner	1
14	Guide pipe	10	30	Steam pressure gauge	1	46	Gas pressure S/W	1
15	Flame detect hole	1	31	Ball V/V	1			

V Inspection before using

⚠ Warning

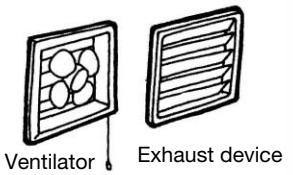
- Before using MIURA Boiler, check the following installation item and make sure that they are installed correctly. The danger of serious accident is existent all the time so you are recommended not to use the machine under incorrect installation situation.

Inspection item before using

■ Boiler room

Is ventilation device (exhaust fan) installed?

Check if the ventilator and exhaust fan are installed. If a sufficiant air exhaust is unavailable, dangerous toxic of carbon monoxide and blast by incomplete combustion may take place as well.



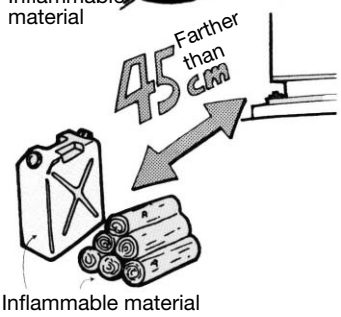
■ Boiler body

Is boiler body installed on the incombustible material base?

Check if the material of base is not made of wood such as inflammable material. If it is used, a fire and other accidents may take place.

Is the distance between boiler and combustible materials sufficient?

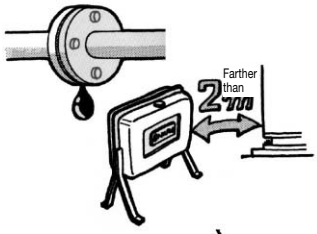
Boiler installation shall not be made in the inflammable and dangerous material handling place and make sure that the distance from inflammable materials is farther than 45cm.



■ Fuel piping

Any fuel leakage in fuel piping? Longer than 2m in horizontal distance between oil tank and boiler?

If not snfficient in horizontal distance between oil tank and boiler an explosion is likely to take place dangerously.



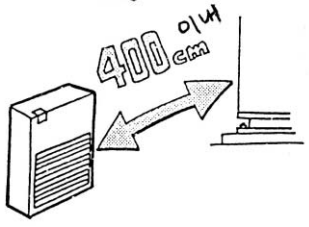
Is not the fuel in fuel piping leaked out?

Is a gas leakage alarm installed?

Install a gas leakage alarm in LPG or LNG for exlusive use boiler.

LPG is heavier than air, thereby causing the gas blast through being accumulated on the floor.

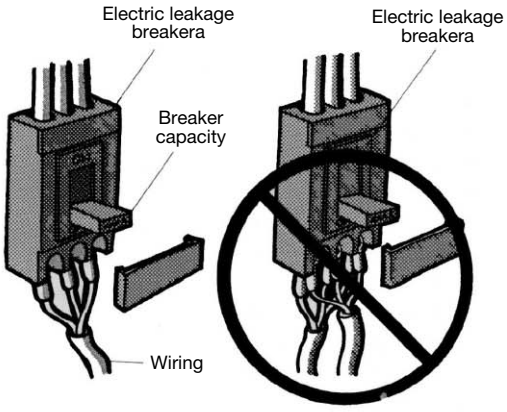
LNG is lighter than air, thus bringing about the gas blast through being collected on the ceiling.



⚠ Warning

■ Electric work

If warning matters on electric work are not observed, it may lead to electric shock or other serious accident.



Is power source only for boiler?

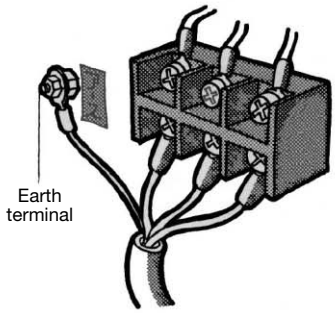
Make sure that an exclusive use breaker as power source of boiler is attached.

Is electric leakage breaker attached?

Check if a breaker attached to main power source is an electric leakage one.

Do you use designated product for cable thickness?

Check if cable thickness and breaker capacity are in accordance with designated specification or not.



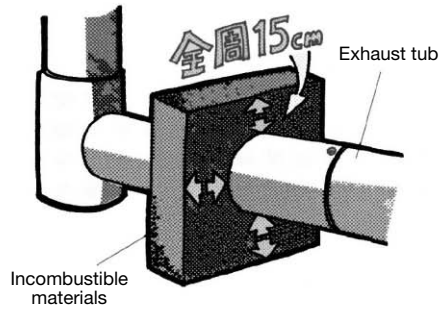
Is ground wiring connected to earth terminal?

Make sure that ground wiring is connected to earth terminal inside a boiler control box.

■ Installation of exhaust tub

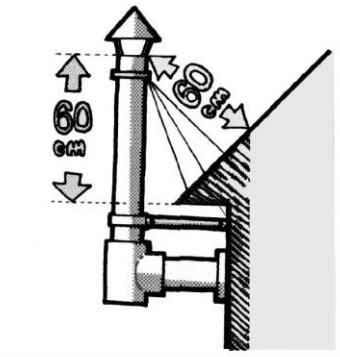
Is penetration part of exhaust tub composed of incombustible materials?

Make sure that penetration part of exhaust tub is composed of incombustible materials. If it is composed of combustible materials a fire may take place..



Are combustible materials not near the circumference of exhaust tub?

Check if inflamable materials are not near the circumference of exhaust tub. If they are existent nearby, it may be the cause for a fire.



Is the connection part airtighted and fixed securely?

Check if airtightness and fixation of it are made fully or not. If not, a toxication accident by exhaust gas leakage may take place.

⚠ Warning

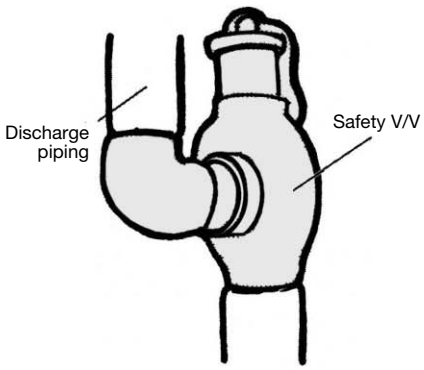
- Before using MIURA Boiler, check the following installation item and make sure that they are installed correctly. The danger of serious accident is existent all the time so you are recommended not to use the machine under incorrect installation situation.

■ Safety V/V discharge piping

Is there not any danger in the direction of the discharge piping end?

Make sure that the direction is not dangerous to people even though hot water is discharged at the discharge piping end?

If the end of piping is toward people there is a danger of a burn and other accidents at the time of hot water discharge.



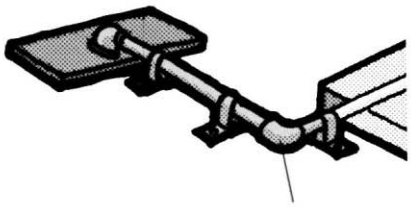
Does the discharge piping not move with reaction by discharging?

Make sure that the discharge piping is fixed securely. If not, the piping will move with reaction by discharging, thereby causing a burn and other accidents at the time of hot water discharge from piping.

■ Blow piping

Does piping not move with reaction by blow water?

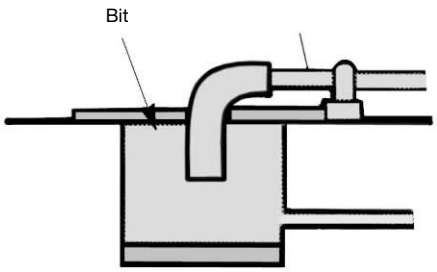
Checking if piping is fixed securely or not. If not, the piping will move with reaction by discharging, thereby causing a burn and other accidents at the discharge of hot water discharge from piping.



Is the end opened to safe place such as bit and etc?

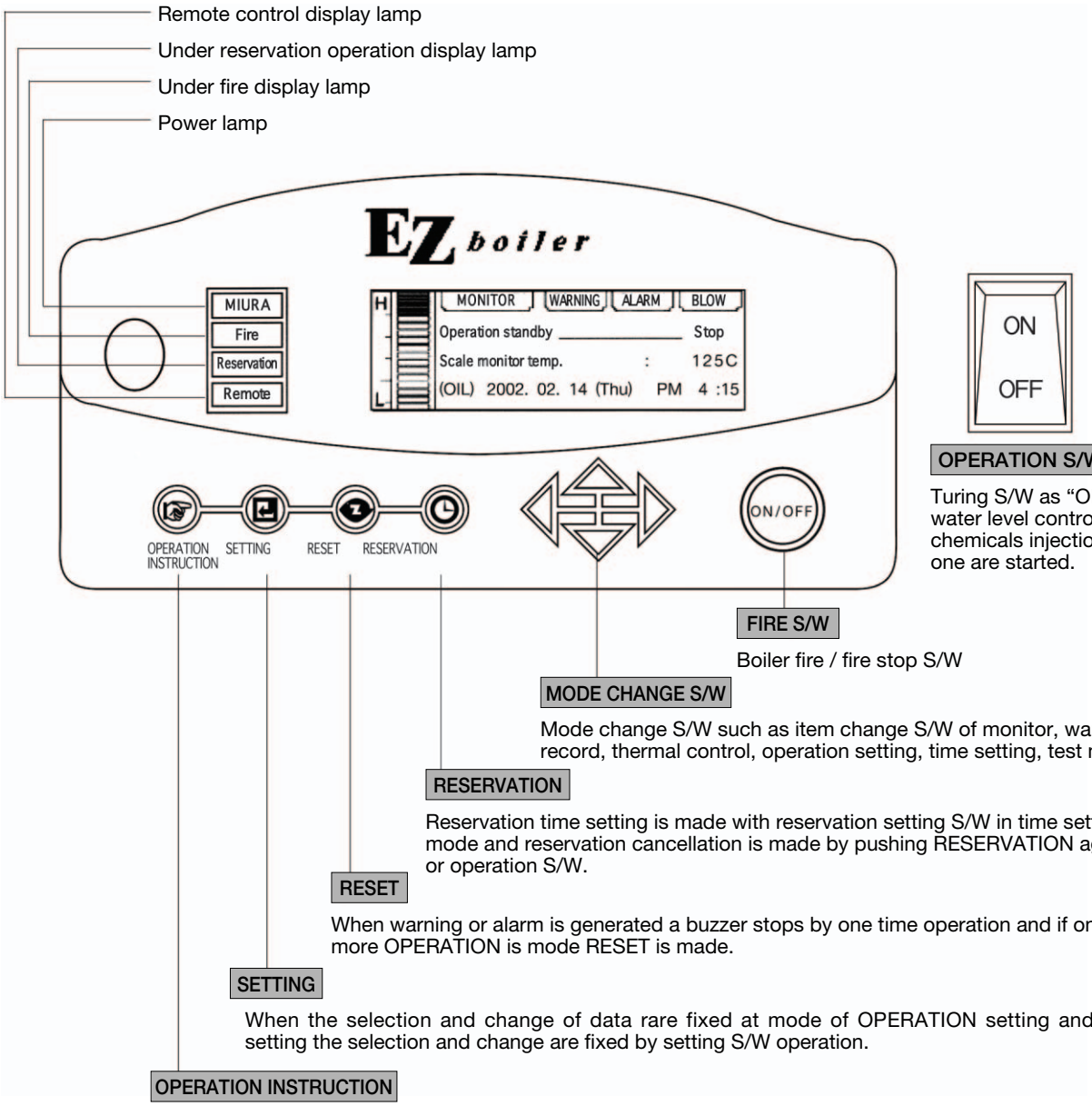
Check if the end of drain piping is opened to safe place such as a bit and etc.

If the end of piping is installed in the place without drain device, the hot water discharge when draining the water may cause a scald and other accidents.



VI Using method of operation system

Title and function of S/W



OPERATION S/W

Turing S/W as “ON”, water level control and chemicals injection one are started.

FIRE S/W

Boiler fire / fire stop S/W

MODE CHANGE S/W

Mode change S/W such as item change S/W of monitor, warning record, thermal control, operation setting, time setting, test mode

RESERVATION

Reservation time setting is made with reservation setting S/W in time setting mode and reservation cancellation is made by pushing RESERVATION again or operation S/W.

RESET

When warning or alarm is generated a buzzer stops by one time operation and if one more OPERATION is mode RESET is made.

SETTING

When the selection and change of data rare fixed at mode of OPERATION setting and time setting the selection and change are fixed by setting S/W operation.

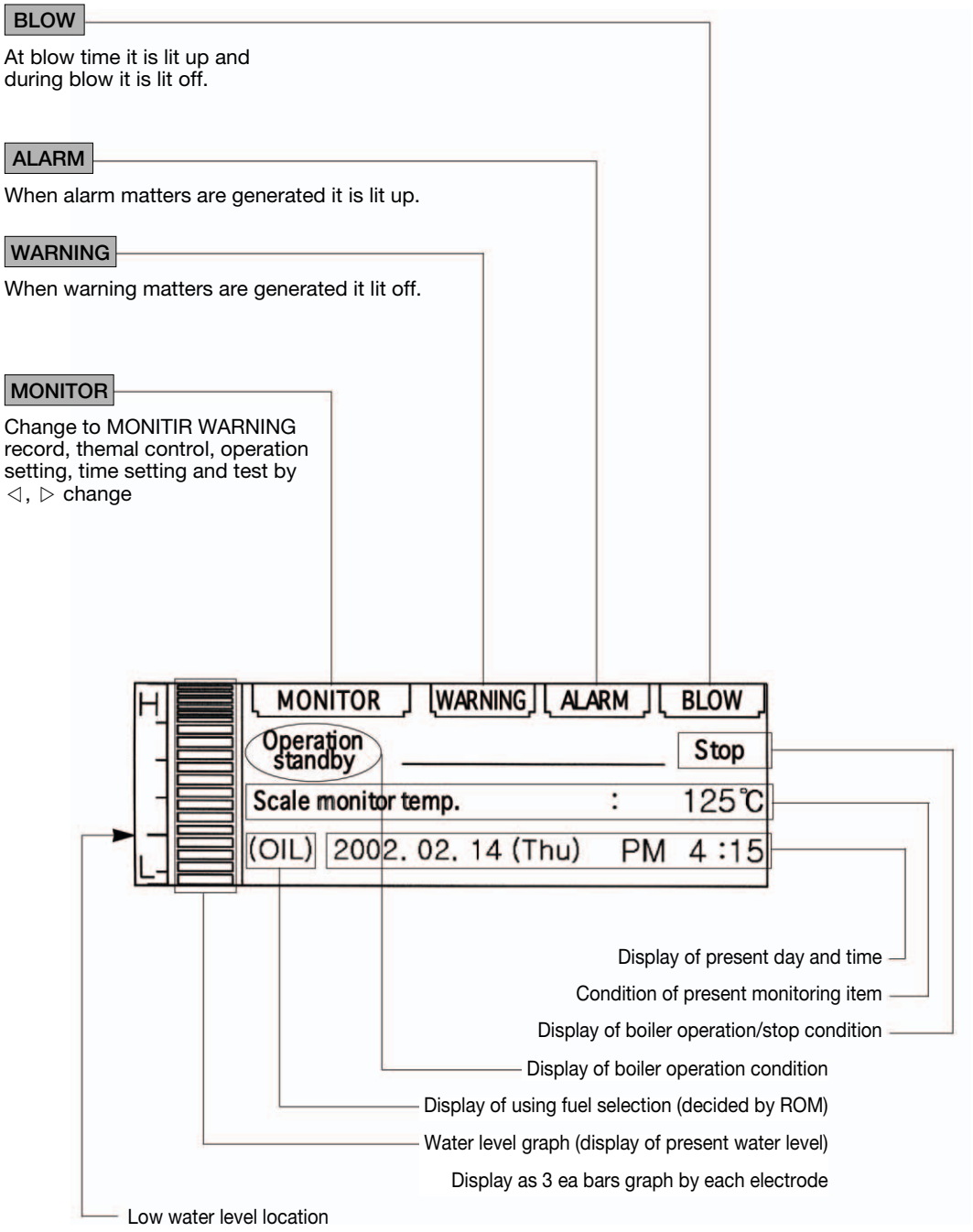
OPERATION INSTRUCTION

In case a warning or an alarm is generated the matter to be taken properly to the situation while pushing the S/W are displayed.

NOTE

LCD protection function: In case LCD operation is not made for one hour the screen is offthrough activation of LCD protection function. When LCD screen isOFF it is ON by pushing any operation key.

Display contents of monitor


BLOW
At blow time it is lit up and during blow it is lit off.
ALARM
When alarm matters are generated it is lit up.
WARNING
When warning matters are generated it lit off.
MONITOR
Change to MONITIR WARNING record, themal control, operation setting, time setting and test by ◁, ▷ change
H
L
MONITOR
WARNING
ALARM
BLOW
Operation standby
Stop
Scale monitor temp. : 125℃
(OIL) 2002. 02. 14 (Thu) PM 4 :15
Display of present day and time
Condition of present monitoring item
Display of boiler operation/stop condition
Display of boiler operation condition
Display of using fuel selection (decided by ROM)
Water level graph (display of present water level)
Display as 3 ea bars graph by each electrode
Low water level location

Operation of controller and its using method

Monitor → Warning record → Thermal control → Operation setting → Time setting → Test

1. Item change is made by drection key ◁, ▷ operation.

2. Item change is made by direction key △, ▽ operation.
   Note) In case operation setting and test mode are under operation the setting is impossible.

■ Contents of each mode

1. Contents of monitor mode

-Example of display-

Monitor item		Contents
Scale monitor	˚C	Displays the temp. of scale sensor within water tube.
Overheat monitor temp	˚C	Displays the temp. of overheat sensor within water tube.
Condensed blow	ON/OFF	

2. Contents of thermal control

-Example of display-

Monitor item		Contents
Fule consumption	Nm³	Displays fuel consumption amount through integrating.
Evaporation	t	Displays evaporated water amount through integrating.
High fire time	min	Displays fire time with high fire through integrating.
Low fire time	min	Displays fire time with low fire through integrating.
Ignition times	times	Displays ignition times through integrating.
Feed water pump ON/OFF times	times	Displays feed water pump ON/OFF times through integrating.

※ For thermal control item one day is integrated.

3. Warning record

-Example of display-

Note) In case a warning is generated, recent 10 items are stored at warning record mode automatically.

4. Operation setting and contents

-Example of display-

⚠ Warning

When changing the contents of operation setting, consult our A/S office.

It may be the cause for a malfunction, fire, blast, etc. of boiler.

After selecting the change item with setting one in application of △, ▽ S/W, pushing setting S/W the changeable part is lit off.

After completing the change in application of △, ▽, ◁, ▷, S/W, pushing setting S/W again the setting change is completed.

Item	Unit	Contents
MI NUMBER	Machine number	When instaling multi-tubes, boiler identification number is set and in case of single tube, setting as 1 is made.
SET DATE		Change day of setting data is inputted.
AUTO BLOW RATE	%	Condensed blow rate is set.
SCALE MONITOR(L)	1˚C	When low fire is made, scale attaching alarm setting temp. is set.
SCALE MONITOR(H)	1˚C	When high fire is made, scale attaching alarm setting temp. is set.
TWIN WATER LEVEL DLY	1sec	Water level delay time is set.
LOW WATER DELAY TIME	1sec	Low water level warning delay time is set.
DAMPER DELAY(L-H)	0.1s	Time from high fire electronic V/V ON to wind amount change is set.
DAMPER DELAY(H-L)	0.1s	Time from high fire electronic V/V OFF to wind amount change is set.
EVAPORATION	100kg/h	Actual evaporation amount of boiler is set.
START TIME	1hour	Data renewal by every one hour from the base time of thermal control data is set.
HEAT VOLUME	10	Low level heat generation amount of using fuel is inputted.
WATER TEMP.	1	Temp. of using water is inputted.
FUEL TEMP.	1	Temp. of using fuel is inputted.
FUEL VOLUME(L)	0.1	Fuel volume at the time of low fire is inputted.
FUEL VOLUME(H)	0.1	Fuel volume at the time of high fire is inputted.
KOREAN/ENGLISH/CHINESE		When selecting using language, one of three languages is inputted.

5. Contents of time setting mode

-Example of display-

Item	Unit	Contents
Month day/Time change	Hour	It is set for month day/time change of monitor.

※ Reservation operation time is set at time setting mode.

6. Contents of test mode

-Example of display-

Item	Scope	Contents
PILOT ONLY	ON/OFF	When adjusting Fire the progressing PILOT ONLY is made.
LOW FIRE ONLY	ON/OFF	When adjusting Fire LOW FIRE ONLY is made.
TEST OF INDIVIDUAL PART	FAN/WP/OP /IGT/VQ/ VQ1/VQ2	As the function capable of outputting specific parts forcibly when testing boiler the forcible output is made by selecting with ON after selection of parts.
OPERATION SETTING INITIALIZATION	Initialization of setting value of all of datum and operations in memory	Possible only if secret number is inputted.

■ Reservation function

For reservation function, the reservation is possible by two kinds of time operation/weekday one. Reservation time is set ahead by selecting operation by reservation time or weekday through moving to time setting item by pushing ▷ S/W in the monitor state.
Since changeable part is lit off by pushing setting S/W for reservation time setting, time setting is completed by pushing setting S/W again after setting the desired time in application of ▽, △, ◁, ▷ arrow marks.

1. Time operation

Pushing reservation S/W the screen as shown in the following figure in the left is seen and pushing a setting S/W the screen is changed as shown in one in the right. Four times reservation a day is possible and pushing a setting S/W through checking reservation time in application of ▽, ▷ arrow mark the reservation lamp is lit up in the left of LCD. When pushing a reservation S/W once again at the time of reservation cancellation or pusing an operation S/W during reservation operation the reservation is cancelled.

2. Weekday operation

Pushing setting S/W after pushing a reservation S/W and selecting weekday operation the condition as shown in the following figure in the right is made and pushing a setting S/W after checking reservation time the reservation is completed and the reservation lamp is lit up. When cancelling the reservation it is cancelled by pushing a reservation S/W once again or pushing an operation S/W during reservation operation.

Operation of main steam V/V

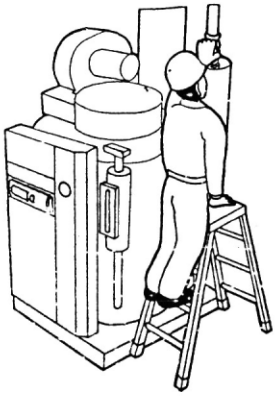
⚠ Warning

Since main steam V/V is located at high place and its footing is limited, operate it in proper clothes(long sleeve, long pants, safety shoes, safety helmet, gloves, etc) when switching on and off.
Since whole boiler body is in the high temperature state directly after stopping it, never touch other part than the handle of main steam V/V. If touched, you may incur a scald and other injury.

Note

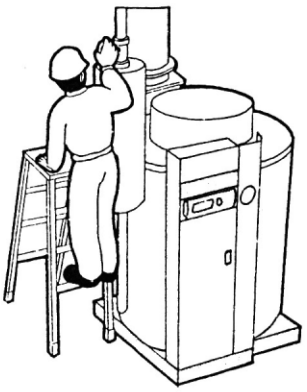
In case a steam header is being installed during piping work, open main steam V/V.
Main steam V/V of steam header plays a role of main steam V/V instead.
Install backflow prevention V/V (check V/V for steam) in steam piping between steam header and boiler.

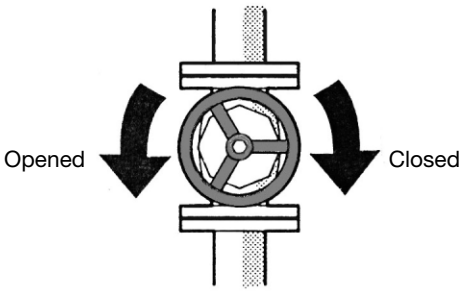
1. Prepare a ladder.
2. Check location and direction of main steam V/V.
3. Open and close the main steam V/V on the ladder.



⚠ Warning

Never jump up and down the ladder. When going up and down, be sure to hold the ladder with both hands and one leg or one hand and both legs in order that you may go up and down safely against the danger of falling down.





Water drain of feed water pump

⚠ Warning

For the boiler of hot water specification and drain recovery, since the water in feed water piping is hot, do not work until the feed water piping cools down (longer than 2 hours from the stop of boiler) fully in order to prevent any injury such as a scald and etc.

Note

V/V of water drain and air drain in the feed water pump is somewhat different from that in specification in some cases. Consult our A/S staff for proper use before using.

■ Water drain of feed water pump

Note

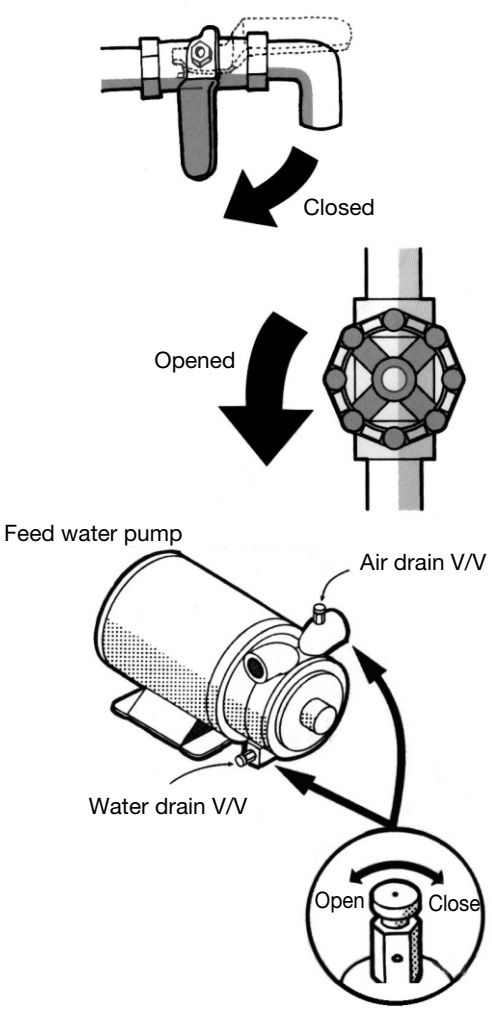
In case of solving the freezing problem by water drain of water tube and feed water pump, do drain work of feed water pump as follows. Drain work of feed water pump shall be done after drain of water tube.

1. Close V/V of water supply and feed water source.
2. Open V/V of water drain and air drain in the feed water pump.

Note

Never turn V/V of water drain and air drain more than once. The water may eruput suddenly.

3. Check if the water does not drain from water drain V/V.
4. Close V/V of water drain and air drain in feed water pump.



Air drain of feed water pump

⚠ Warning

For the boiler of hot water specification and drain recovery, since the water in feed water piping is hot, do not work until the feed water piping cools down (longer than 2 hours from the stop of boiler) fully in order to prevent any injury such as a scald and etc.

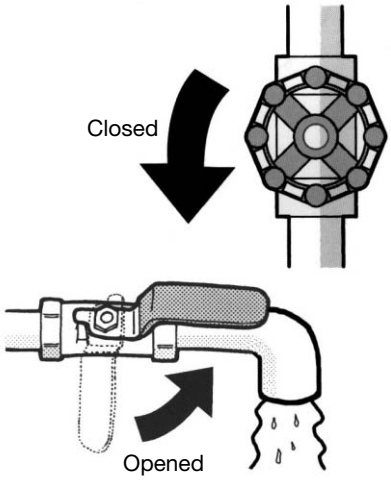
Note

V/V of water drain and air drain in the feed water pump is somewhat different from that in specification in some cases. Consult our A/S staff for proper use before using.

■ Air drain of feed water pump

Note

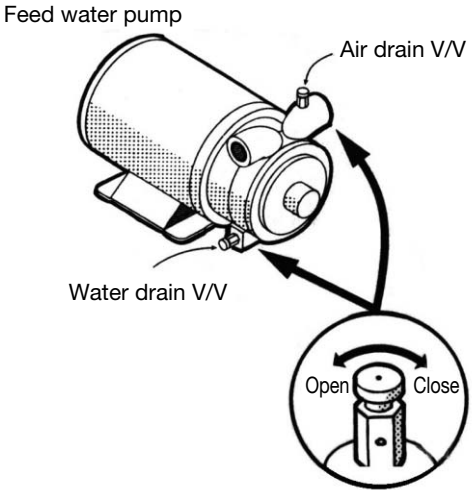
For the remedy on freezing in winter season by cleaning and draining the feed water strainer and in case of the feed water pump filled with air, do the drain work as follows. If air is not drained the feed water pump does not work properly. Never operate it until air drain is completed. When you operate P/P in the state that water is not existent the P/P may be broken badly.



1. Open V/V of feed water source and feed water.
2. Open V/V of air drain in the feed water pump.

Note

Never turn air drain V/V more than once. The water may erupt suddenly.

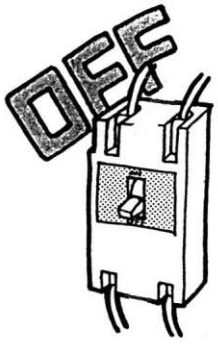


3. Check if only the water comes out through an isloation of air.
4. Close air drain V/V

VII Inspection and preparations before starting

■ Check the following items before operating a boiler.

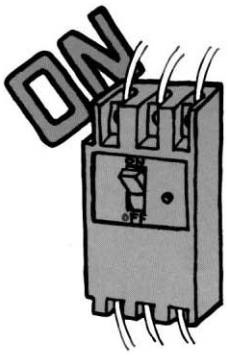
1. Check if a short circuit breaker inside a control box is OFF or not.
   If it is ON, turn it as OFF.



⚠ Warning

Don't operate the boiler with wet hands, which may cause an electric shock.

2. Turn main power as ON.



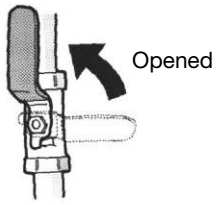
⚠ Warning

Don't operate the boiler with wet hands, which may cause an electric shock.

Note

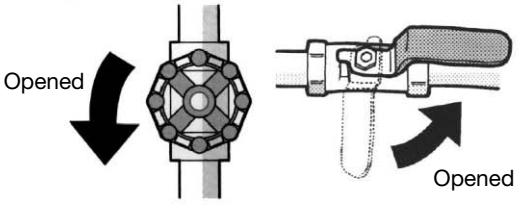
When main power is not used for a long time, turn it as OFF. Without it you may incur an electric shock.

3. After opening air drain V/V of water pipe for about 5 seconds, close it.

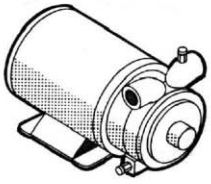


⚠ Warning

In case even little pressure is left within the boiler (when a steam pressure gauge marks 0kg/cm² above), do not open air drain V/V of water pipe. If it is opened, an eruption of steam may bring about a burn and etc.

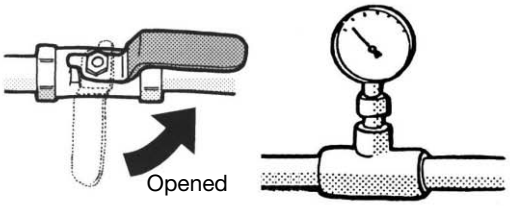


4. After checking if the water is filled in feed water tank above 2/3, open V/V of feed water source and feed water.
5. In accordance with 「using method of operation system and air drain of feed water pump」 in chapter 6, drain air from the feed water pump.
   ☞ 40page

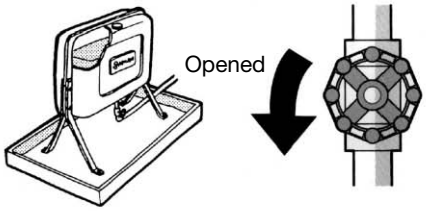


6. Confirmation of fuel

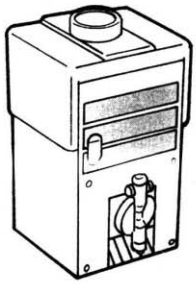
■ The case which will use the gas.
Open the gas inlet valve.
Read chapter 9「Maintenance/gas pressure checking up」and check whether gas pressure gauge is on the normal.



■ The case which will use the oil.
Check if the fuel is filled fully in tank and open the fuel V/V in it.

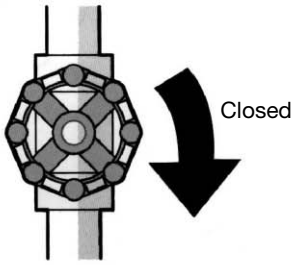


7. According to「Repair & inspection/Chemicals injection inspection」, check if designated amount of chemicals is in chemicals injection TK or not.
☞ 52page

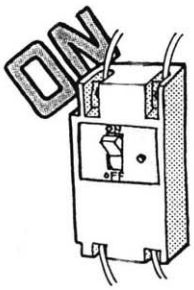


8. According to「Repair & inspection/Soft water inspection」in chapter 9, check if feed water is made as soft one or not.
☞ 55page

9. Check if main steam V/V is closed or not. If not closed, close it in accordance with「Using method of operation system/Operation of main steam V/V」in chapter 6.
☞ 38page



10. Turn a short circuit breaker within a control box as ON.



⚠ Warning

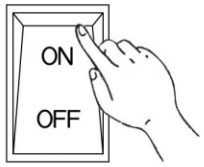
Don't operate the boiler with wet hands, which may cause an electric shock.

VIII Operation

The case which use the gas

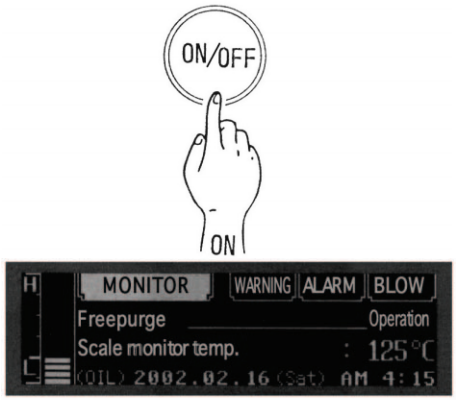
Starting(normal operation)

1. Complete 「Inspection and preparations before starting」 in chapter 7.
☞ 41page



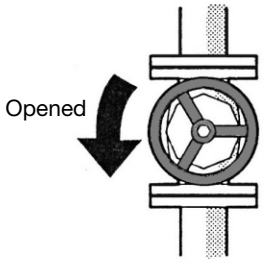
2. Turn operation S/W as ON.
Water supply is controlled automatically and 「Operation standby」 condition is made.
Check if 「Operation standby」 condition is made or not.

3. Turn combustion S/W as ON.
When 「combustion」 lamp is lit up it alarms that combustion action is taken.
Ignition action is taken after prepurge and then low is entered.
Low combustion is passed after main try and high combustion is being executed.



4. Wait until an indicated value of steam pressure guage reaches the designated pressure one(5kg/cm^2).

5. According to 「Using method of operation system/ Operation of main steam V/V」 in chapter 6, open main steam V/V slowly.
By repeating low combustion and high one alternately, supply the designated pressure steam.
☞ 38page



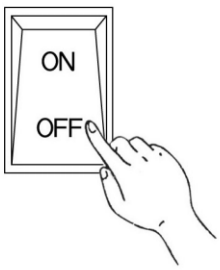
Stop

1. Turn fire S/W as OFF.
   A fire lamp is it off.
   Acoording to the condition a post fire is executed.
   Thereafter a post purge is being executed.

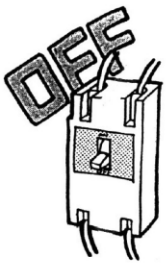
2. Check if a post fire is completed or not.
   Marking of display changes from 「Post purge to Operation standby」.

Note

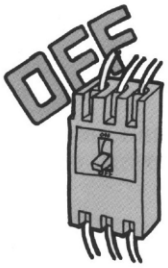
If an operation is stopped without a sufficient purge, the gas heaped within the furnace may be the cause for trouble.



3. Turn operation S/W as OFF.

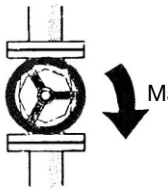


4. Turn a short circuit breaker in a control box as OFF.



5. Turn main power as OFF.

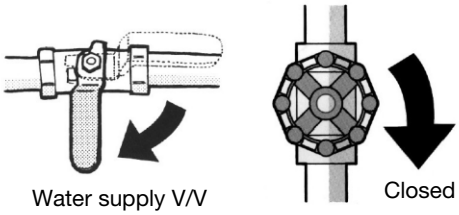
6. Pursuant to 「Using method of operation system/Operation of main steam V/V」 in chapter 6, close main steam V/V.
   ☞ 38page

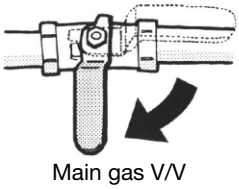


7. Close V/V of water supply, main water supply and main gas.

⚠ Warning

In case of danger of freezing, take a freezing remedy according to 「Repair & inspection / Danger of freezing」 in chapter 9.
In case of stop for a long time, see 「Repair & inspection / Standstill for a long time」 in chapter 9.





Inspection matters during operation

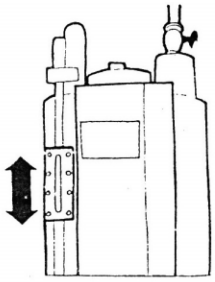
⚠ Warning

When abnormal phenomenon such as abnormal sound, smell, smoke, etc takes place, turn operation S/W OFF and close fuel V/V. Fire and explosion are likely to take place.

For abnormal phenomenon handling, follow an instruction of our company A/S staff. Never use our boiler in the state that the cause for abnormality is not removed fully.

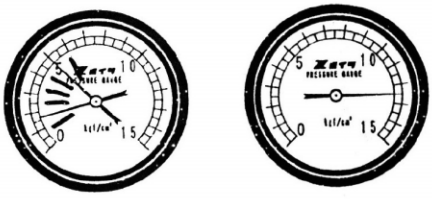
It may lead to the cause for a fire and explosion.

1. Make sure that black smoke or white one comes out of a stack or not.

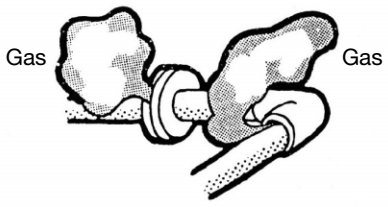


2. Make sure that any abnormality of a blower, a feed water pump, etc in operation sound is present or not.

3. Make sure that serious vibration or abnormal value in an indicator of steam pressure gauge and oil pressure gauge is present or not.



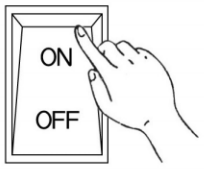
4. Make sure that any fuel leakage is present or not.



The case which use the oil

Starting(normal operation)

1. Complete「Inspection and preparations before starting」in chapter 7.
☞ 41page

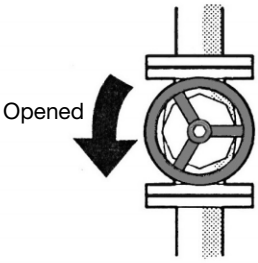


2. Turn operation S/W as ON.
Water supply is controlled automatically and「Operation standby」condition is made.
Check if「Operation standby」condition is made or not.

3. Turn combustion S/W as ON.
When「combustion」lamp is lit up it alarms that combustion action is taken.
Ignation action is taken after prepurge and then low is entered.
Low combustion is passed after main try and high combustion is being executed.

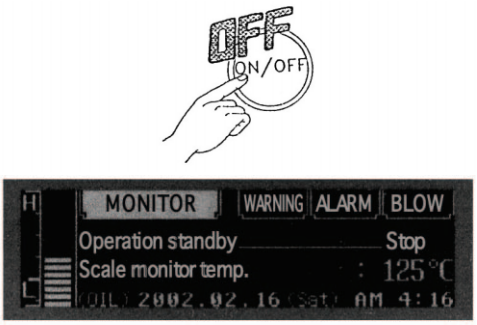
4. Wait until an indicated value of steam pressure guage reaches the designated pressure one(5kg/m^2).

5. According to Using method of operation system/Operation of main steam V/V in chapter 6, open main steam V/V slowly.
By repeating low combustion and high one alternately, supply the designated pressure steam.
☞ 38page



Stop

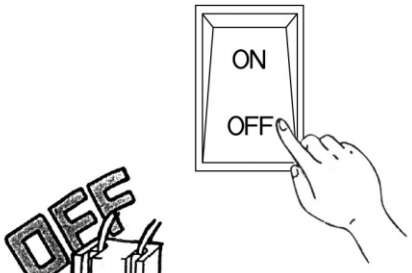
1. Turn combustion S/W as OFF.
   The combustion lamp is lit off. According to the condition post fire is executed. Thereafter post purge is being executed.
2. Check if post purge is completed or not.
   Marking of display changes from 「Post purge」 to 「Operation standby」.

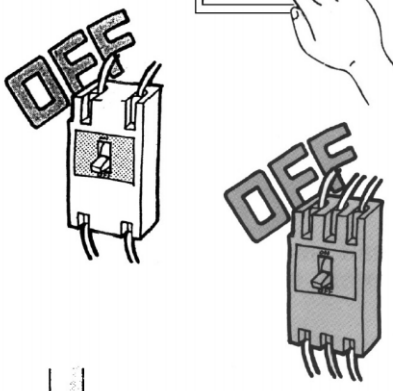


Note

If an operation is stopped without a sufficient post purge, the gas heaped within the furnace may be the cause for trouble.

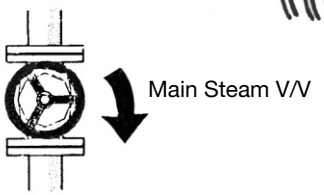
3. Turn operation S/W as OFF.
4. Turn a short circuit breaker in a control box as OFF.
5. Turn main power as OFF.
6. According to 「Using method of operation system/ Operation of main steam V/V」 in chapter 6, close main steam V/V. ☞ 47page
7. Close V/V of water supply, main feed water, main feed oil.





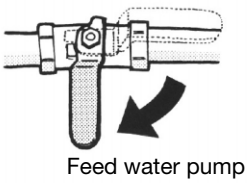
⚠ Warning

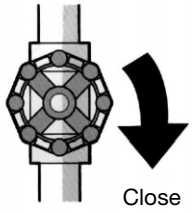
In case of danger of freezing, take a freezing remedy according to 「Repair & inspection / Danger of freezing」 in chapter 9. In case of stop for a long time, see 「Repair & inspection / Standstill for a long time」 in chapter 9.



⚠ Warning

For operation of fuel V/V, operate only fuel V/V of oil tank. If closing other V/V than that of oil tank since an oil in fuel piping is expanded by discharging heat of boiler body directly after boiler stop, there is some danger of the damage in oil P/P and that of the leakage in fuel oil.



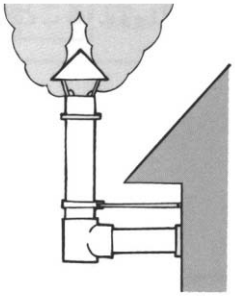


Inspection matters during operation

⚠ Warning

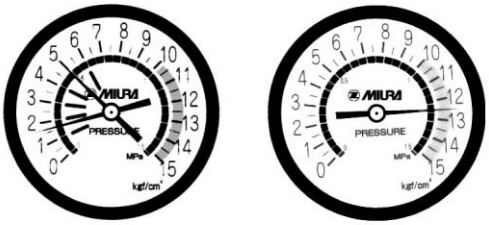
When abnormal phenomenon such as abnormal sound, smell, smoke, etc takes place, turn operation S/W OFF and close fuel V/V. Fire and explosion are likely to take place.
For abnormal phenomenon handling, follow an instruction of our company A/S staff. Never use our boiler in the state that the cause for abnormality is not removed fully.
It may lead to the cause for a fire and explosion.

1. Make sure that black smoke or white one comes out of a stack or not.



2. Make sure that any abnormality of a blower, a feed water pump, etc in operation sound is present or not.

3. Make sure that serious vibration or abnormal value in an indicator of steam pressure gauge and oil pressure guage i present or not.



4. Make sure that any fuel leakage is present or not.

IX Repair & inspection

In case of possible destruction by freezing

Note

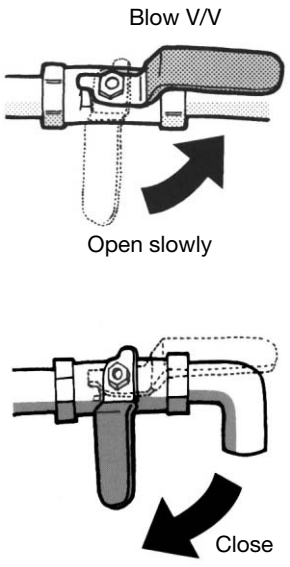
The following instructional freezing remedy is an example. According to the regional situations boiler installation, take a comprehensive freezing remedy including circumferential instruments. For the freezing remedy, consult our A/S office freely any time.

■ A freezing remedy by drain of water tube and water supply P/P

1. Stop an operation according to 「Starting / Stop」 in chapter 8.
   ☞ 43page
2. Wait until the display of a steam pressure gauge reaches 0to 2kg/cm^2.
3. Open V/V of a water tube blow slowly and blow the water tube.
4. When a steam pressure gauge exceeds 2kg/cm^2, do not open V/V of the water tube blow.

⚠ Warning

Each part of boiler is made of hot temp. materials. Never touch other part than water tube blow V/V, which may cause a scald.
Do not open water tube blow V/V abruptly, which may lead to a burn by means of abrupt eruption of hot water.
Check if blow piping is fixed securely in order that it may not be moved by any reaction of blow.
Check if the end of blow piping is opened to safe place such as a bit and etc.



5. Close V/V of the water tube blow.
6. Drain the water form feed water pump according to 「Using method of operation system / Drain of feed water pump」 in chapter 6.
   ☞ 39page

When a boiler is not used for a long period

Note

In case a boiler is not used for a long time a proper preservation and control for the boiler is very important.
When the boiler comes to a standstill the concern about the maintenance & repair of the boiler tends to be negligent.
Without good preservation condition of water tube during the standstill of the boiler some corrosions may be rusted dangerously.
The preservation method is classified into the full water one in application of the water removed from remained oxygen and the drying one by maintaining the inside of the boiler.

In case of the standstill, consult our A/S office any time without fail.

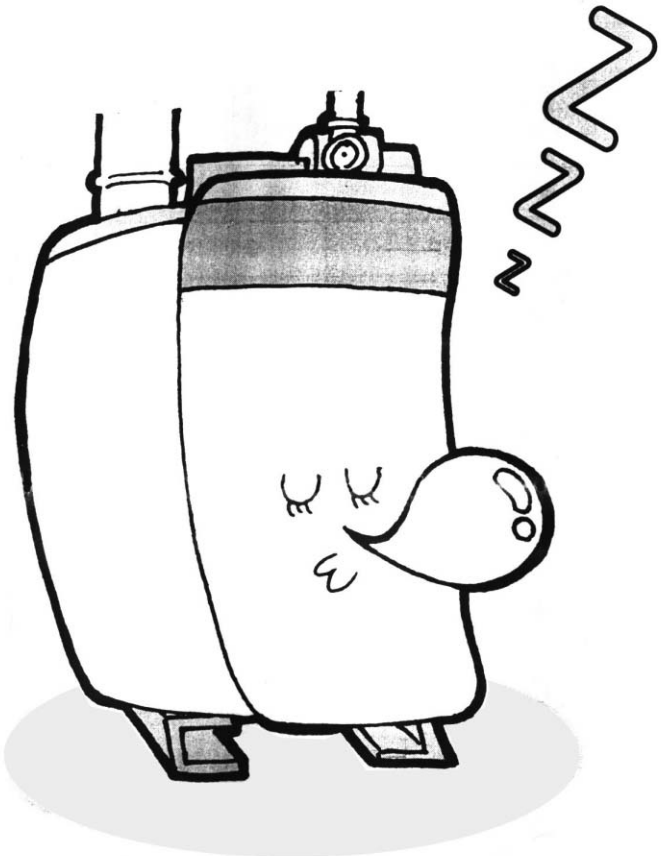


Table of the place and time for inspection and cleaning

⚠ Warning

Do not other work than the designated one, which may lead to personal accident.

✻In order to maintain high economical efficiency and safety of EZ type MIURA Boiler for a long time and prevent any possible accident in advance, take the following inspection and cleaning on a regular basis. (Check the details with our A/S staff.)

✻Even with standard inspection periods described herein the times of inspection and cleaning increase naturally according to using condition such as bad water quality and etc. The proper times are subject to using situations so follow the instructions of our A/S staff without fail.

Items of inspection and cleaning	Period of inspection and cleaning			
	Every day	1 month	3 months	Every year
Inspection chemicals feed pump	●			
Inspection on a water softener	●			
Inspection on steam pressure	●			
Inspection on oil pressure	●			
Inspection on combustion	●			
Inspection on the low water level		●		
warning			●	
Cleaning of the water supply tank			●	
inside			●	
Cleaning of a water supply strainer			●	
Request for water quality analysis			●	
Inspertion on oil strainer			●	
Cleaning of burener				●
Cleaning of oil tank				●
Inspection on safety V/V	●			
Inspection on sightglass of a water level gauge				●

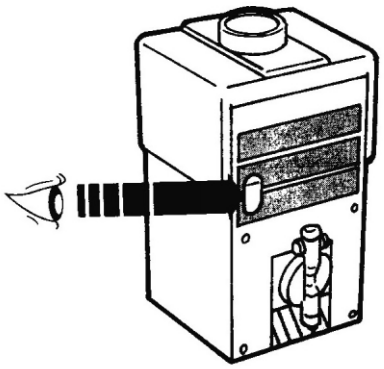
Inspection on chemicals feed pump

Note

Chemicals feed pump is essential to the water quality control of boiler. Use it correctly through reading the manual of chemicals injection system thoroughly before using it. And keep it at hand together with boiler manual in order that you may read them conveniently any time.

■ Inspection on remained chemicals

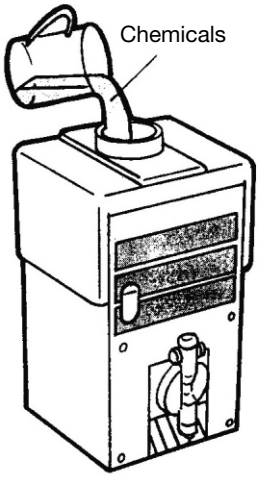
1. Check remained chemicals through looking into Chemicals tank.
2. In case remined amount is small, insert an indicated input amount of cleaning chemicals into the Chemicals tank through weighing it together with our A/S staff.



Chemicals feed pump

⚠ Warning

In case of inputting chemicals, be sure to wear protective glasses and gloves. If they are in contact with your eyes and hands you may incur a loss of eyesight and an injury on the hands.
If the chemicals touch your skin directly, wash it with the flowing water immediately.
If they enter into the eyes, wash them with the flowing water instantly and consult with a doctor as well.



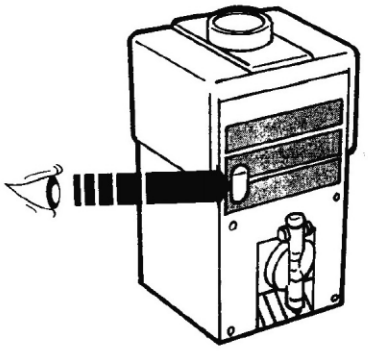
Note

Follow the instructions of our A/S staff for an input amount of chemicals.
If you are negligent in supplimenting the chemicals, an air enters into chemicals feed pump to the extent that the chemicals can not be supplied to a boiler so you are required to inspect remained chemicals without fail.
In case of slow consumption of chemicals in the chemicals tank the air may enter into the chemicals feed pump so drain the air in the tank.

■ Air drain of chemicals feed pump

⚠ Warning

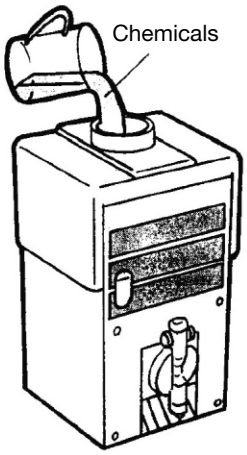
When draining an air in the chemicals feed pump, wear protective glasses and gloves without fail. If the chemicals are in contact with the eyes and hands a loss of eyesight and an injury on the hands may take place.



Note

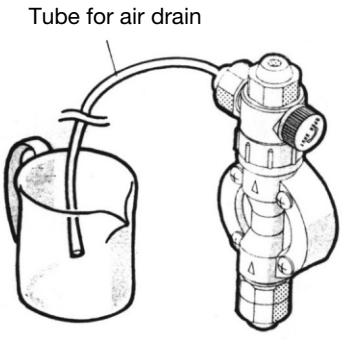
In case an air enters into the chemicals injection P/P, drain an air in it in the following manner.

1. Turn combustion S/W as OFF.



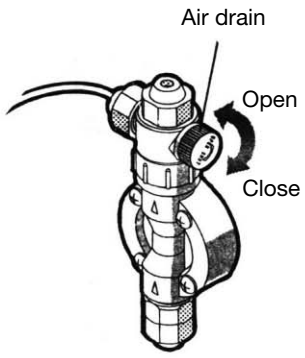
2. Check remained chemicals in the chemicals tank.

3. If remained chemicals are small, replenish them into the tank.



4. According to the manual of chemicals feed pump, attach one end of tube for air drain being an accessory of chemicals feed pump to air outlet and put other end of tube into a weighing cup.

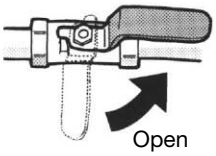
5. Loosen air drain V/V of chemicals feed pump.



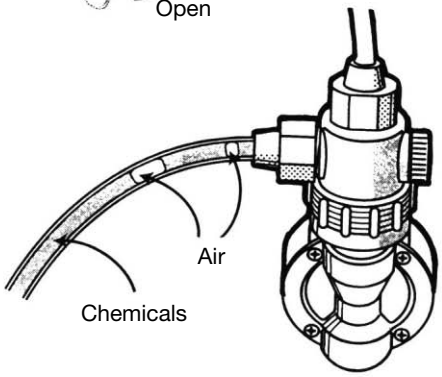
⚠ Warning

Never turn air drain V/V of the chemicals feed pump more than twice. Through eruption of chemicals you are likely to incure a loss of eyesight and an injury on the hands.

6. Open blowdown V/V of water tube in boiler.

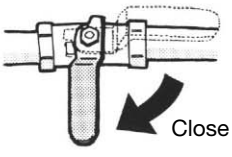


7. Opening blowdown V/V water, while water supply to the boiler is being progressed the chemicals feed pump is operated and then the chemicals including an air come out. If all of air in the pump is emptied out, only the chemicals come out.



8. Check if an air in the chemicals feed pump is emptied out and only the chemicals come out.

9. Close air drain V/V of the chemicals feed pump.



10. Close blowdown V/V.

11. Place the tube for air drain to the original location.

12. Check if the chemicals are leaked out or not. In case of their leakage, wash them with soft cloth cleanly and remove the cause for the leakage.

Inspection on soft water

■ Checking soft water

1. Previously, discharge about 2L of water powerfully from the safety valve (excreting congested water)

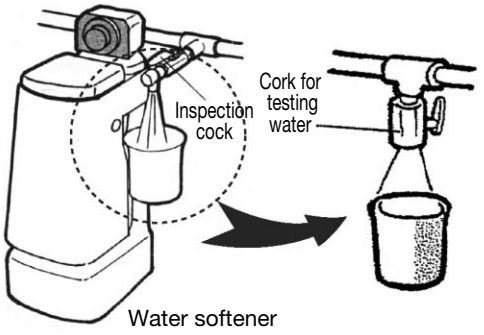
2. From safety valve, wash the accessory poly beaker with water frequently.

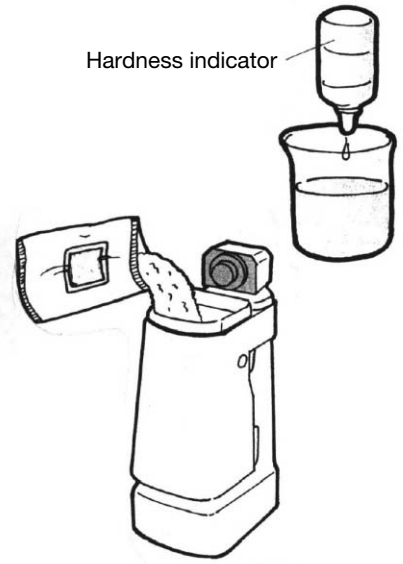
3. Add 4 drips of indicator to the poly beaker(Sampling water first may make it difficult to mix the hardness indicator)

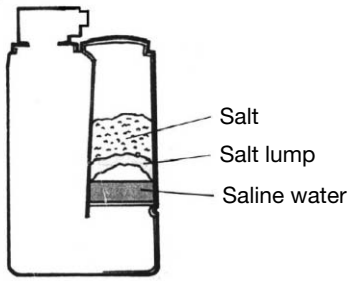
4. Get about 20mL of water from safety valve and pour it to the poly beaker. Shake it frequently.

5. After shaking it frequently, get the water from safety valve and pour it to the poly beaker until the amount reaches 50mL.

6. Check the water color in the poly beaker.
   Water color~Blue : Soft water
   Blue purple~Red : did not become soft water





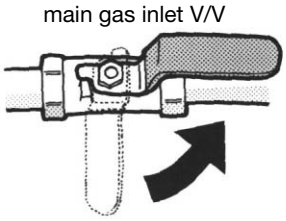


⚠ Attention

Do not automatically mix the water in the poly beaker. It makes measuring the exact amount impossible. For specific measurement, drop 4 droplets of hardness indicator. Keep 50mL of water acquired from safety valve.
The hardness indicator should be slowly dropped with the pipette vertically positioned. After shaking enough, get water until the amount reaches 50mL. Examine the color change immediately. After more than 10 minutes, color change becomes dull with exact measurement failed.

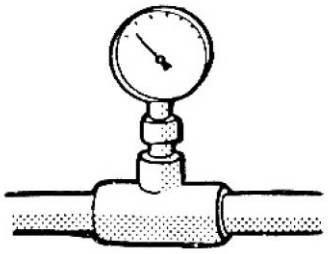
Check for gas pressure

1. Open main gas inlet V/V.



2. Check gas pressure gauge on the boiler whether it's in the regular pressure.

3. If the value of the gas pressure guage is not the standdard one,, stop the boiler immediately according to chapter 8 「Openration/Stop」 and contact out our A/S office.



Normal value of gas pressure

Gas \ Boiler	EZ-500GO, SGO~EZ-2000GO, SGO
LNG	1000 ~ 4000mmAq
LPG	

Inspection on oil pressure

Note

For oil pressuree inspection, do it during boiler operating. An oil P/P is operated in the state of combustion but accurate pressure inspection is not possible if oil P/P is not operated.

1. Inspect oil pressure during boiler combustion.
   Make sure that a combustion lamp is lit up.

⚠ Warning

Each part is in the state of hot temperature during boiler operation, don't touch it. You may suffer some burn.

2. Make sure that marking of oil pressure gauge is rated value or not.

⚠ Warning

In case any abnormality is present in oil pressure, contact our A/S office after stopping an operation immediately. If operating a boiler in the state of abnormality of oil pressure continuonsly, some personal accident may take place.

Rated value of oil pressure

Kind of boiler	Pressure
EZ–500GO, SGO	8kg/cm²±1
EZ–600GO, SGO	8kg/cm²±1
EZ–800GO, SGO	8kg/cm²±1
EZ–1000GO, SGO	8kg/cm²±1
EZ–1500GO, SGO	12kg/cm²±1
EZ–2000GO, SGO	15kg/cm²±1
EZ–2500GO, SGO	15kg/cm²±1
EZ–3000GO, SGO	14kg/cm²±1

Cleaning of burner

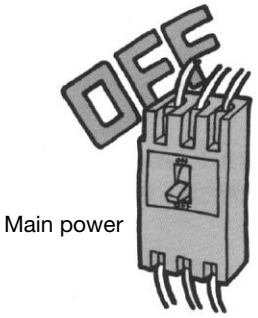
⚠ Warning

Since each part of boiler is hot directly after boiler stop, don't operate the boiler until it cools down fully(until about 2 hours after boiler stop). You may incur some scald.

Note

Since the frequency of burner cleaning changes due to the fuel usage and its condition, follow an instruction by our A/S staff.

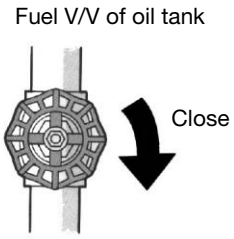
1. Turn main power of boiler OFF.



⚠ Warning

Don't operate a boiler with wet hands, which may lead to electric shock.

2. Close fuel V/V of oil tank.

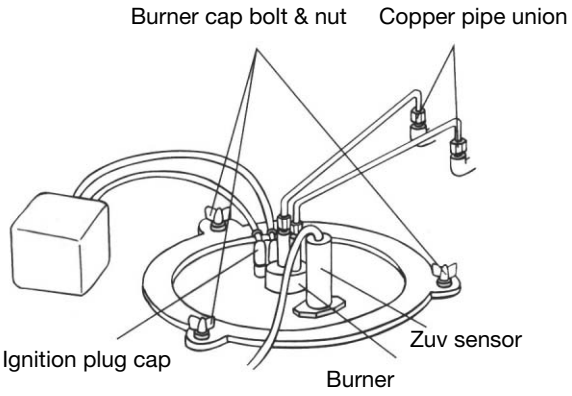


3. Put a burner through disassembly at the place where the work is done easily.

4. Put it on the stand.

5. Loosen two unions of copper pipe.
   If using two sets of spanner, the copper pipe can be disassembled without any damage.
   Since small amount of oil leak out of copper pipe, cover it with a floorcloth.

6. Disassemble an burner cap bolt & nut.



7. Disassemble a cap of ignition rod and pick out Zuv sensor.

8. Detach a burner body and put it through laying the floorcloth on the place where handling is done easily and safely.

Note

Since an oil in nozzle chip comes out, cover it with the floorcloth.

9. Move the working place together with the floorcloth.

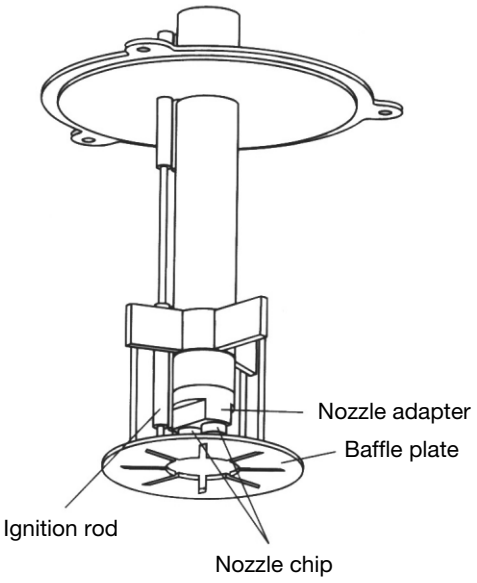
10. Remove the smokes attached to a baffle plate and an ignition rod with a wirebrush.

11. Make sure that any crack, damage and deformation in the baffle plate and the ignition rod are present or not.

12. Loosen the bolt & nut of ignition rod with a hexagon wrench.

13. Widen the ignition rod so that a nozzle chip may be turned.

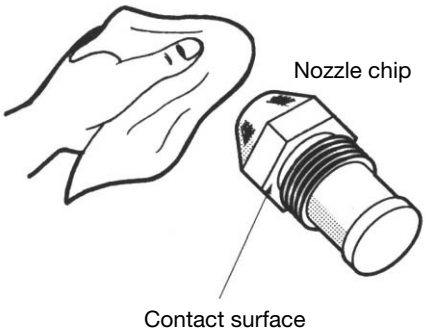
14. Pick out the nozzle chip through putting a spanner on the nozzle adapter and turning nozzle chip.



Note

Nozzle chips are different in dimension respectirely when fitting, fit them only after cleaning their one side to protect any confusion.
Since an oil in fuel oil piping comes out, cover it with a floorcloth.

15. Wash the smokes attached to a nozzle chip with a floorchoth.



Note

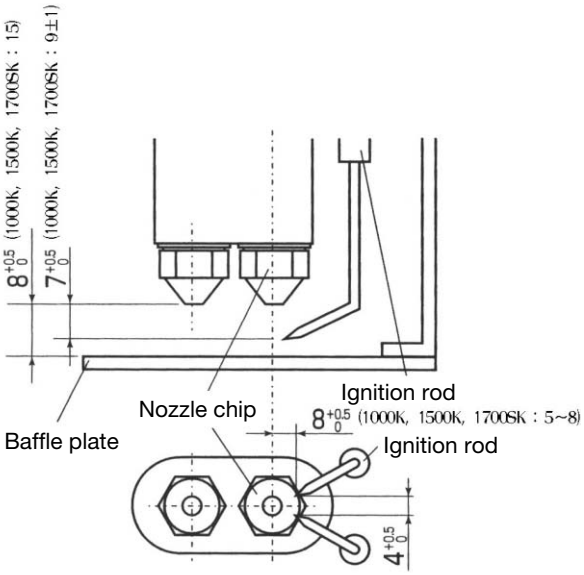
Clean the fuel eruption port at a vertical hem of nozzle chip so that it may not be clogged with the smoke and dust.

16. Make sure that any damage on the contact surface of a nozzle chip and a burner is present or not.

⚠ Warning

In case of damage, contact our A/S office. If using in the state of damage it may cause some fire or explosion by fuel leakage.

17. While checking the degree of regulations, fit a nozzle chip and an ignition rod.



Note

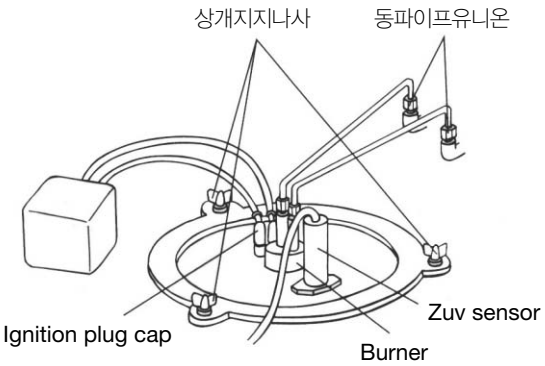
If tightening an ignition rod very strongly, it cracks and loosening it very much its location is out of place when picking into an ignition cord so pay a lot of attention to tightening.

18. Assemble in reverse order when disassembling.

19. Make sure that a copper pipe and a union are fully tightened or not.

⚠ Warning

Make sure that a copper pipe and a union are fully tightened or not. If not, it may lead to some fire, explosion, etc.



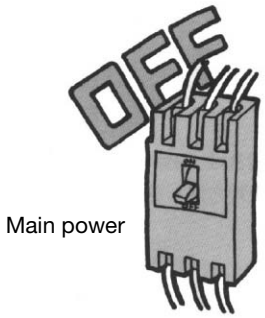
보일러 정면

Cleaning of Zuv sensor

⚠ Warning

Since each part of boiler is hot directly after boiler stop, don't operate the boiler until it cools down fully(until about 2 hours after boiler stop). You may incur some scald.
In case of cleaning Zuv sensor, be sure to contact our A/S staff and clean it through following the instruction by our staff.

1. Turn main power of boiler OFF.



⚠ Warning

Don't operate a boiler with wet hands, which may lead to electric shock.

2. Pick out Zuv sensor.

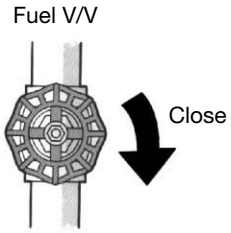
3. Loosen the bolt & nut of Zuv sensor eye cover.

4. Wash the smokes attached to the glass of Zuv sensor cover bottom with soft cloth cleanly.

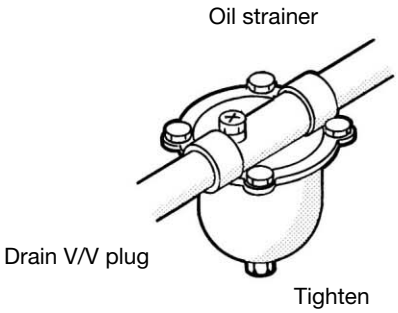
5. Make an assembly to the original state and place Zuv sensor to the original location.

Cleaning of oil strainer

1. Proceed to 「Operation / Stop」 in chapter 8.
☞ 43page

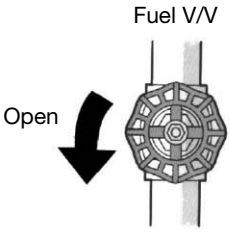


2. Loosen air drain bolt & nut on the top of oil strainer and loosen drain plug.
The water and the impurities inside oil strainer are drained together.



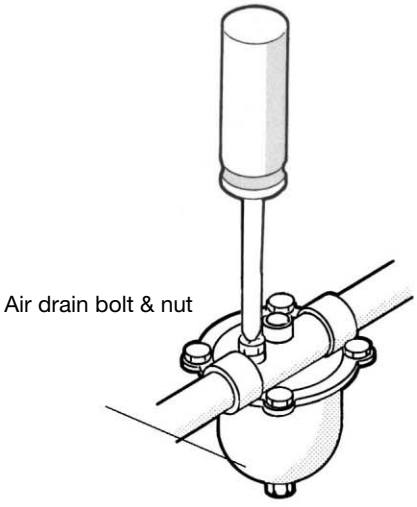
Note
Place a vessel so that an oil under oil strainer may not be leaked out.

3. When the water and the impurities in the oil are removed, fit a drain plug.



4. Open fuel V/V of oil tank.

5. Loosen air drain bolt & nut on the top of oil strainer little by little.

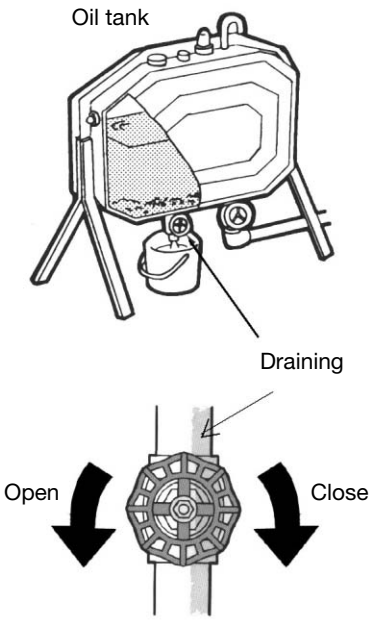


6. After checking that enly oil is leaked out, tighten air drain bolt & nut.

Cleaning of oil tank

1. Open drain V/V of the bottom of oil tank.

2. Check if the water and the impurities are in the oil or not.



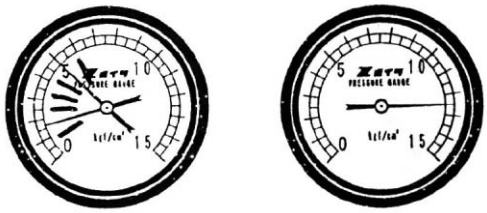
Note

Place a vessel so that an oil in the bottom of oil tank may not be leaked out.

3. Close drain V/V of the bottom of oil tank.

Inspection on steam pressre

1. Follow 「operation/start」 in chapter 8.
   ☞ 43page



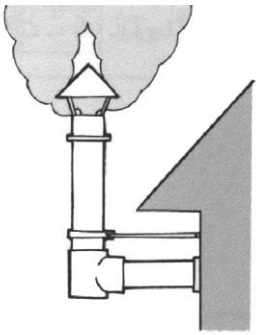
2. Make sure that an indicator of steam pressure gauge rocks extremely or displays abnormal value.

⚠ Warning

In case of any abnormality in steam pressure, contact onr A/S office after stopping an operation immediately. If doing an operation in abnormal condition of oil pressure continuously, it may lead to some personal accident.

Inspection on combustion

1. Make sure that any black smoke and white one come out of a stack or not.



⚠ Warning

In case that black smoke and white one come out, stop an operation immediately and contact our A/S office. If operating a boiler in the state of abnormal combustion, it may cause personal accident.

Blowdown method

⚠ Warning

After checking if a boiler stops or not, operate a blow. A scald and etc. may take place badly (A blow shall be operated on the next day from the standstill of the boiler.)

Note

For blow operation, make sure that the instructions of our A/S staff shall be observed fully without fail.

■ Blowdown method

1. Proceed to 「Operation / Starting」 in chapter 8.
   ☞ 43page
2. Check if a steam pressure gauge displays 1.5 to 2kg/cm^2 or not.

Steam pressure gauge

3. Turn combustion S/W as OFF.
   The combustion lamp is lit off and then post purge is proceeded. (At this time, close steam V/V.)

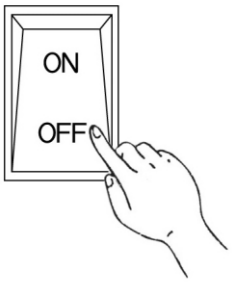
⚠ Warning

When the display of a steam pressure gauge is above 2kg/cm^2, do not operate a blow.
Abrupt eruption of steam and hot water may cause an injury such as a burn and etc. (When steam pressure is high, down the pressure through opening steam V/V.)

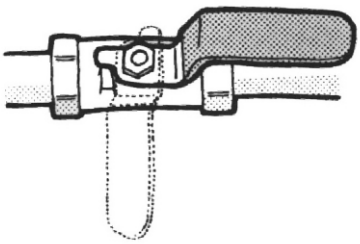
4. Check if post purge is completed or not.
   (When a blower stops, post purge is completed accordingly.)

5. Check if a feed water pump stops or not.

6. Turn operation S/W as OFF.



7. Blow water tube by opening about 1/3 of blowdown V/V of boiler water tube slowly.



⚠ Warning

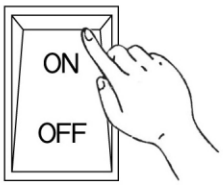
Each part of a boiler is composed of high temp. part. If contacting other part than blowdown V/V of water tube you may bring about a burn and etc.
Do not open blowdown V/V of water tube abruptly. A sudden eruption of hot water may cause a scald or other injury.
Check if blow piping is fixed solidly so that it may not be acted by reaction of a blow.
Check if the end of blow piping such as a bit and etc. is opened safely to the safer place or not.

Note

Fix a knob of V/V during blowdown.
If the knob of V/V during blowdown is changed, normal blowdown may not be made.

8. Check if blowdown is made fully or not.
(Blowdown is completed fully in about 10 minutes)

9. Close blowdown V/V of water tube.



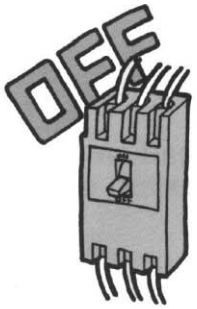
10. Turn operation S/W as ON.
Automatic water supply control is started and operation standby condition is made.
Check if「Operation standby」condition is made or not.

Cleaning of feed water tank inside

⚠ Warning

Since the water in feed water tank capable of recollecting condensed water is hot, do not the work until the water cools down fully (about 2 hours later from stop of a boiler) to protect the danger of being burned.

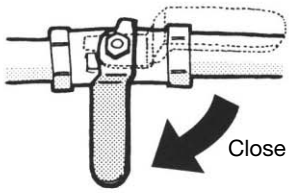
1. Turn main power of the boiler as OFF.
   Check if a steam pressure gauge displays 0kg/cm^2 or not. In case it does not display 0kg/cm^2 wait until the value is displayed.



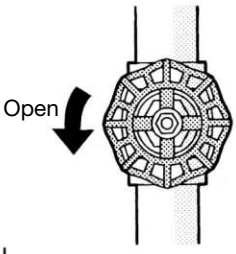
⚠ Warning

In case of operating a main power, don't operate it by wet hands, which may be the cause for electric shock.

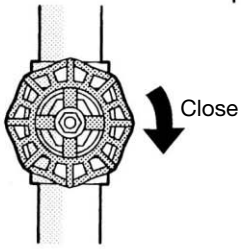
2. Close replenishing V/V.



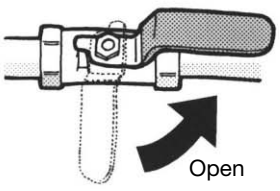
3. Open blow V/V of feed water tank.



4. When the water does not come out, close blow V/V of feed water tank.



5. Open replenishing water V/V.
In case of operating a main power, don't operate it by wet hands, which may be the cause for electric shock.

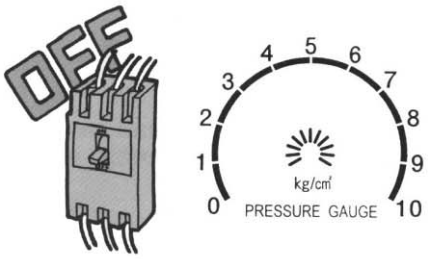


Claning of feed water strainer

⚠ Warning

Since the water in feed water tank capable of recollecting condensed water is hot, do not the work until the water cools down fully (about 2 hours later from stop of a boiler) to protect the danger of being burned.

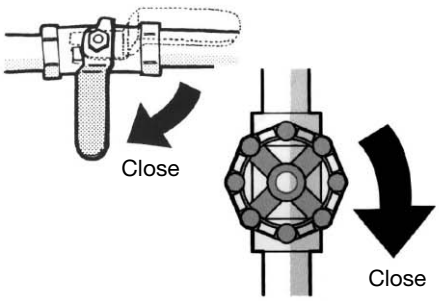
1. Turn main power of the boiler as OFF.
   Check if a steam pressure gauge displays 0kg/cm^2 or not. In case it does not display 0kg/cm^2, wait until the value is displayed.



⚠ Warning

In case of operating a main power, don't operate it by wet hands, which may be the cause for electric shock.

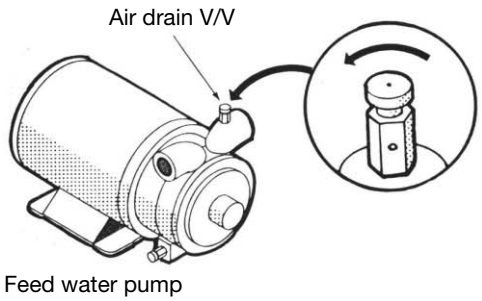
2. Check if feed water V/V and main feed water V/V are closed or not.



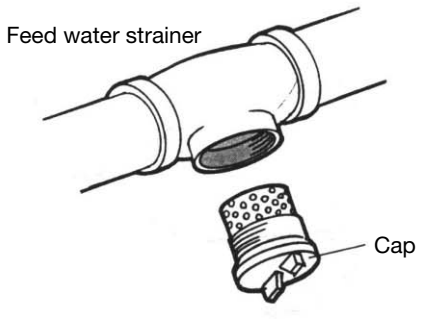
⚠ Warning

Close water supply V/V without fail. In case of a backflow of water any accident such as a scald and etc. may take place.

3. Open air drain V/V of feed water pump.
   Remove the pressure within feed water piping.



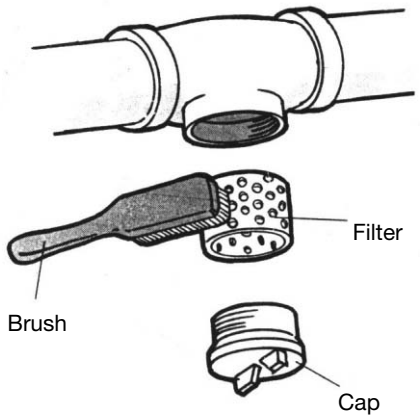
4. Open a cap of feed water strainer.



Note

The water in piping comes out when a cap of feed water strainer is opened. In particular, in case of long piping you had better use a bucket for a large amout of water.

5. Clean a brush through picking out a filter.
   In case foreign materials in the gap of the filter are not removed and in case it is deformed, you are required to replace it with new one after consulting our A/S office.

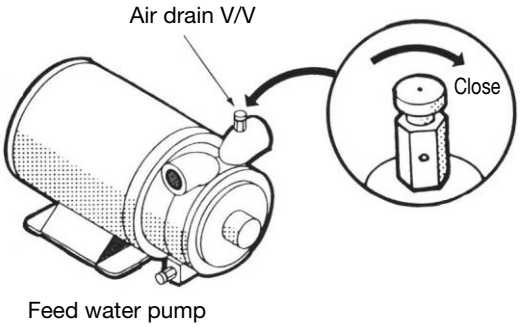


6. Place the filter at original location of feed water strainer.

7. Tighten a strainer cap solidly.

8. Close air drain V/V of feed water pump.

9. When operating a boiler after cleaning the feed water strainer, drain an air in feed water pump according to 「Using mothod of operation system / Air drain of feed water pump」 in chapter 6.
   ☞ t40page



Analysis of water quality

Note

Do an analysis of water quality once per four months. The city water, underwater, industrial use water change according to season. If neglecting the water quality analysis, it may lead to the fall of boiler efficiency and the damage of water pipe. Our company, Korea MIURA do the water quality analysis through introduction of modern adalysis equipments. For it, contact on A/S office freely at any time.

水質 分析 結果 報告書

決裁	擔當	檢印	檢印	承認

업 체 명	(주)미강푸드빌	관리구분	MMP	의뢰처	경인북부A/S과 구리사무소	
보 일 러	EX-500SG	제조번호	951888		채 수 자	최길홍
가동시간	8hr/day	가 동 율	%		분 석 자	
급수온도	0℃	회 수 율	%		채 수 일	2007년 01월 12일
사용압력	0kg/cm²	연 수 기	MS-10N		접 수 일	2007년 01월 15일
약품종류	KIS	관수농축시간	hr		분 석 일	2007년 01월 15일
약 주 기	CPI-30L	블 로 우 실시상태			우편번호	135-270
원수구분	수도수					

관리	측 정 항 목		단 위	분 석 결 과				보일러수 기준치 최고사용압력 1MPa(10kgf/cm²)이하
				원 수	연 수	급 수	관 수	
농축도관리	수소이온농도		PH		7.64		9.97	11.0 ~ 11.8
	전기전도도		us/cm		141		256	4000 이하
	산 소비량	$CaCO_3$	ppm					100 ~ 800
	염화물이온	Cl^-	ppm		20		40	400 이하
부식스케일관리	경도	$CaCO_3$	ppm		1 〉		29.6	1 이하
	실리카	SiO_2	ppm		3.9		42	
	철	Fe	ppm		0		0.11	
								보일러수 기준치 KS규격집 KS B 6209기준
기타분석								

※ 위 실험 결과는 폐사 제품에 준하여 분석한 것으로서 타용도로는 사용할 수 없음.

실험결과 및 대책

보일러수에 경도가 나와 있습니다. 연수장치에 소금이 투입되는지 확인바랍니다.
경도가 검출되고 있습니다. 연수장치 설치를 부탁합니다.
보일러물의 농축부족입니다. 블로우관리를 부탁드립니다.

참고 사항

1. 2회/일, 연수 및 연수기 재생기간 체크하시어 경도 누출에 의한 피해를 방지하시기 바랍니다.
   경도 지시약으로 연수 체크시 : 청색-연수 양호, 적색-연수 불량 → 연수기 점검
   경도 성분은 스케일 생성의 주 요인으로 관내 누출 축적시 열효율 저하, 관내 수관 팽창 및 파열이 발생합니다.
2. 부로우 작업 필히 실시하시어 관내 과다 농축으로 인한 캐리오바 및 관부식 등의 피해를 방지하시기 바랍니다.
3. 지하수는 수질 변화 심하며 그에 따라 연수기 용량, 블로우 시간 및 약품 변동하니 참고하시기 바랍니다.

한국미우라공업주식회사 A4(210×297mm)

Safety V/V

⚠ Warning

Safety V/V requires a regular inspection. If neglecting it a danger such as some explosion and etc due to the trouble of the V/V may take place.

Note

Adjust eruption pressure of safety V/V to the displayed value. In case small tolerence may take place, do not adjust it without paying a lot of attention to it.
In case of sensing an abnormality, contact our A/S office.

For safety V/V inspection, please assign it to our repair & maintenance staff.

Water level gauge glass

⚠ Warning

A water level gauge requires a regular change. If neglecting it a danger of accident by the damage may take place.

For the water level gauge change, please assign it to our A/S staff.
When sensing an abnormality such as a leakage and etc, contact our A/S office immediately.

X In case of changing the fuel (gas to oil)

■ Fuel change

1. From gas to oil
2. From oil to gas

Note

Caution in changing the fuel

1. Before changing the fuel, be sure to contact us and request combustion adjustment. But for the adjustment, the boiler could break down, soot or delayed ignition caused.
2. Before changing the fuel, be sure to close all the gas and oil valves.
3. While changing the fuel, you might get burned if the temperature of the boiler or its inside is high. Be sure to change the fuel when the temperature is low.
4. Turn off the boiler.
5. While changing the fuel, be sure use a carrier to carry the heavy parts - gas burner, air register and so on - and pipe parts separated from the main body.

1. Fuel change for EZ-500, 600, 800GO and SGO

1. Stop boiler operation in conformity with Ch. 8. Operation Mode.
   ☞ 43Page
2. Turn off the boiler.
3. Close the main fuel valve.

Inside the boiler control box

Toggle switch for fuel change

1. In case of EZ-OIL
   Move the toggle switch to Oil.
2. In case of EZ-GAS
   Move the toggle switch to Gas.

4. Move the toggle switch to the type of fuel you would like to use. ☞ 72Page
5. Open the fuel valve to be used. (Aeration is necessary in case of using oil.)
6. Turn on the boiler.
   − Before changing the fuel, be sure to contact us and request combustion adjustment.
   − But for the adjustment, the boiler could break down, soot or delayed ignition caused.
7. Put the boiler in operation in conformity with Ch. 8. Operation Mode. ☞ 43Page

2. Fuel change for EZ-1000~EZ-1500GO and SGO

1. Stop boiler operation in conformity with Ch. 8. Operation Mode.
   ☞ 43Page
2. Refer to Ch. 10. Maintenance and Repair and conduct the blowing process. ☞ 65Page
3. Turn off the boiler.
4. Refer to the picture below and move the toggle switch to the type of fuel you would like to use.

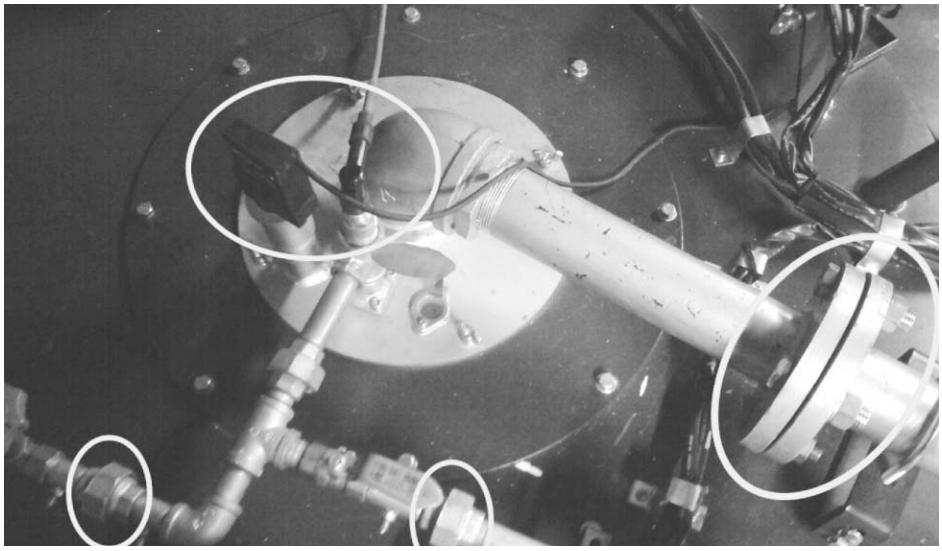
Inside the boiler control box
Toggle switch for fuel change

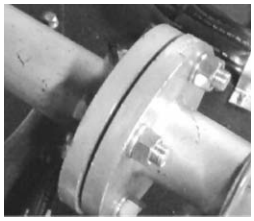
1. In case of EZ-OIL
   Move the toggle switch to Oil.
2. In case of EZ-GAS
   Move the toggle switch to Gas.

5. Close the main fuel valve.

※ 6. Explained from Clause 6 to 16 is how to change the fuel from gas to oil.
Follow its reverse order when changing the fuel from oil to gas.

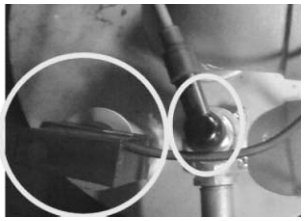
6. Refer to the picture below and separate gas burner parts.
1) Flange 2) Pilot union 3) ZUV sensor 4) Ignition pole cap 5) Burner-holding bolt
− The location the ZUV sensor is installed differs depending on capacity.



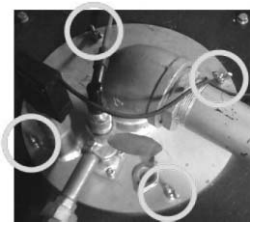


1. Flange

2. Pilot union

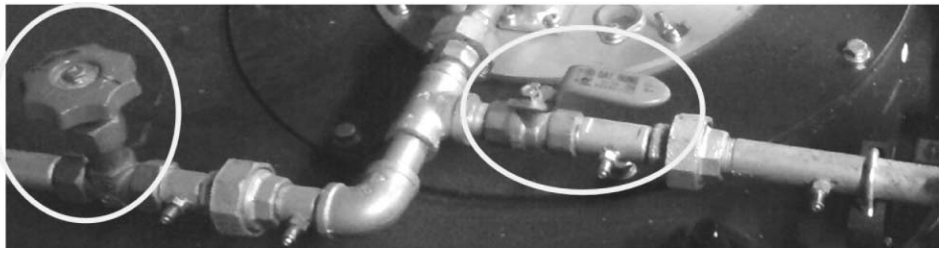


3. ZUV sensor
4. Ignition pole cap



5. Burner-holding

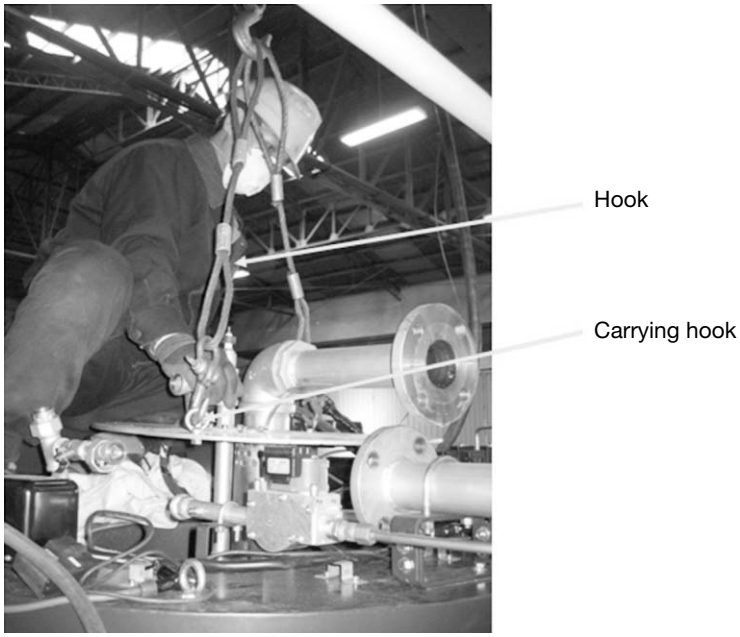
− After separating the pilot union, be sure to close the air and gas line valves.



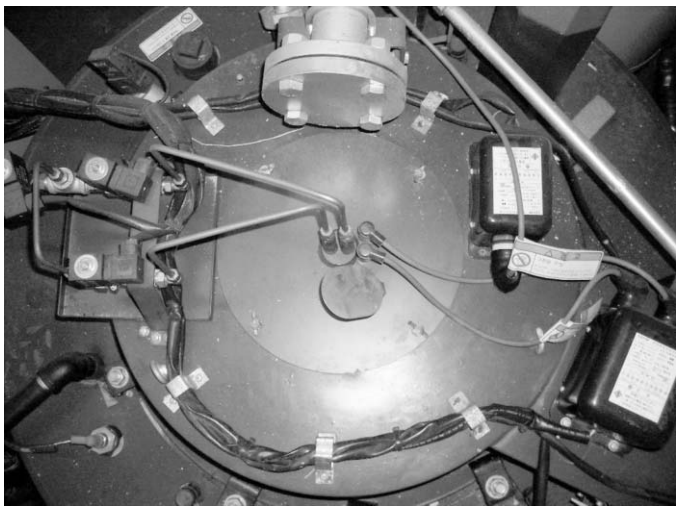
7. Be sure to keep the separated parts safely.

8. Be sure to move the separated gas burner with a carrier and keep it safely.
   − Before moving the gas burner, check if all parts and pipes are separated from the burner.
   − Move the gas burner with care so no parts are damaged and no accident occurs.

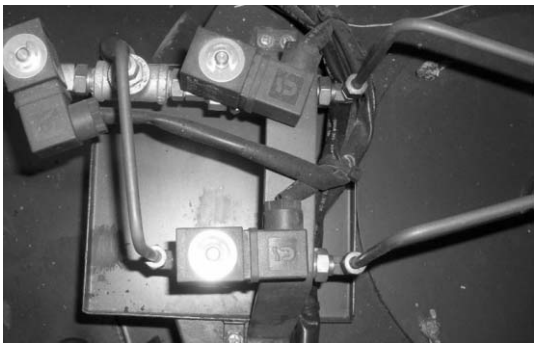
※ Moving the gas burner



9. Insert the wind box inner tube into the separated gas burner.
   − The inner tube controls air flow and needs no assembly.
10. Check the dimensioning of the oil burner in storage. ☞ 60Page
11. Move the gas burner with care so no parts are damaged and no accident occurs.
12. Before assembling the oil burner, be sure to check the connection location of the high/low-combustion copper tubes.

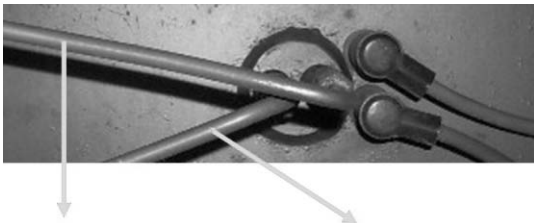


13. Be sure to assemble it like the picture below.



Low-combustion copper tube line

High-combustion copper tube line



Ignition pole cap
※ Connect 1 cap in case of using gas.
※ Connect 2 caps in case of using oil.

Low-combustion copper tube line High-combustion copper tube line

ZUV sensor
※ The installation location might differ depending on capacity.

14. Open the fuel valve.
    − Check if the oil is out through the oil pump aeration valve.
    − Check what fuel to use and open the fuel valve.
    − Be sure to close the fuel valve not in use.
15. Turn on the boiler.
    − Before changing the fuel, be sure to contact us and request combustion adjustment.
    − But for the adjustment, the boiler could break down, soot or delayed ignition caused.
16. Put the boiler in operation in conformity with Ch. 8. Operation Mode.

3. Fuel change for EZ-2000~EZ-3000GO and SGO

1. Stop boiler operation in conformity with Ch. 8. Operation Mode.
☞ 43Page

2. Refer to Ch. 10. Maintenance and Repair and conduct the blowing process.
☞ 65Page

3. Turn off the boiler.

4. Refer to the picture below and move the toggle switch to the type of fuel you would like to use.

Inside the boiler control box

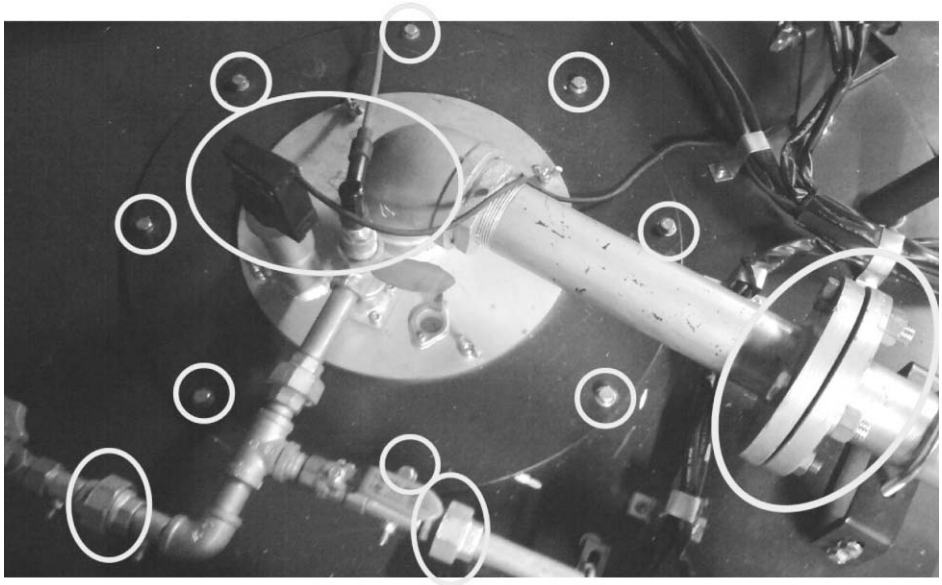
Toggle switch for fuel change

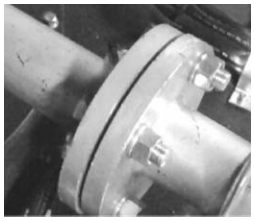
1. In case of EZ-OIL
   Move the toggle switch to Oil.
2. In case of EZ-GAS
   Move the toggle switch to Gas.

5. Close the main fuel valve.

※ 6. Explained from Clause 6 to 16 is how to change the fuel from gas to oil.
Follow its reverse order when changing the fuel from oil to gas.

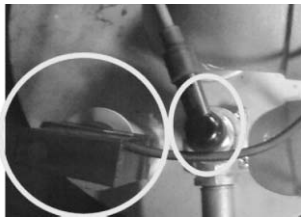
6. Refer to the picture below and separate gas burner parts.
1) Flange 2) Pilot union 3) ZUV sensor 4) Ignition pole cap 5) Burner-holding bolt
※ The location of the holding bolts might differ depending on boiler capacity.



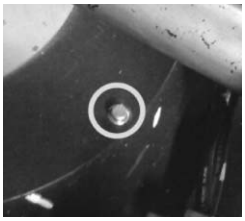


1. Flange

2. Pilot union

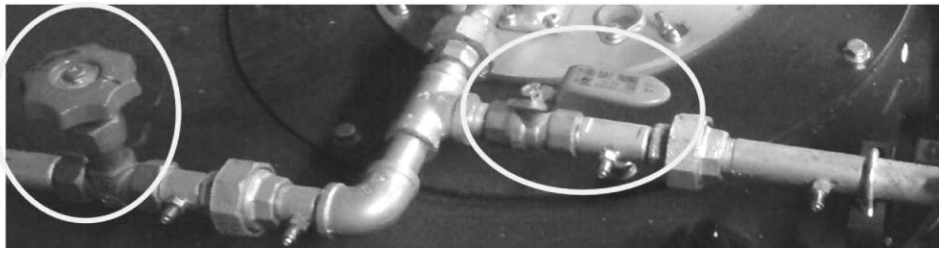


3. ZUV sensor
4. Ignition pole cap



5. Burner-holding

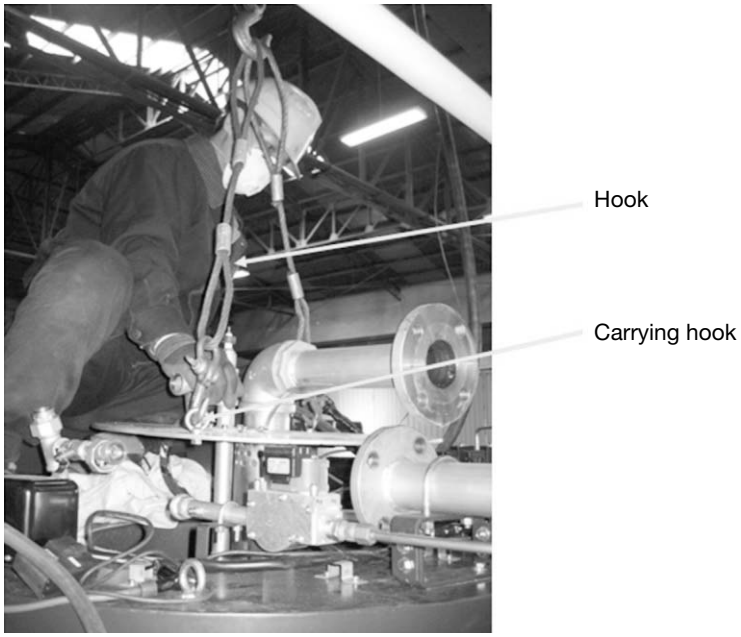
− After separating the pilot union, be sure to close the air and gas line valves.



7. Be sure to keep the separated parts safely.

8. Be sure to move the separated gas burner with a carrier and keep it safely.
   − Before moving the gas burner, check if all parts and pipes are separated from the burner.
   − Move the gas burner with care so no parts are damaged and no accident occurs.

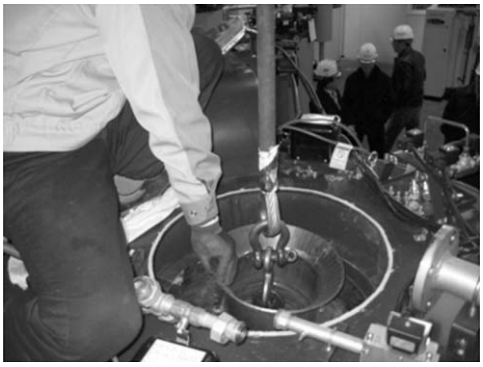
※ Moving the gas burner



9. Cover the air register with cloth to protect it off from impurities.
   Fasten the air register and undo the bolts.

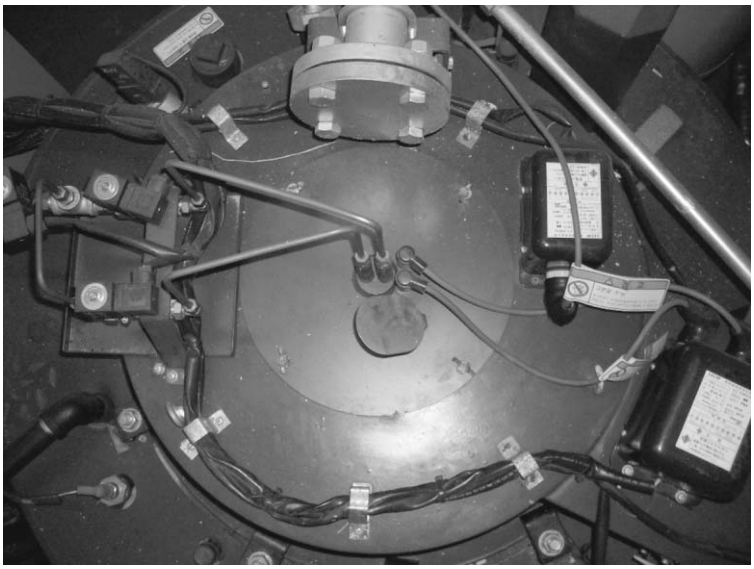
10. Be sure to move the separated air register with a carrier and keep it safely.
    − Be sure to use a carrier to move it. Otherwise, an accident might happen.
    − Move it with care so no parts are damaged and no accident occurs.

11. Move the oil wind box part and air register in store with a carrier and assemble them on the location of the separated gas air register.

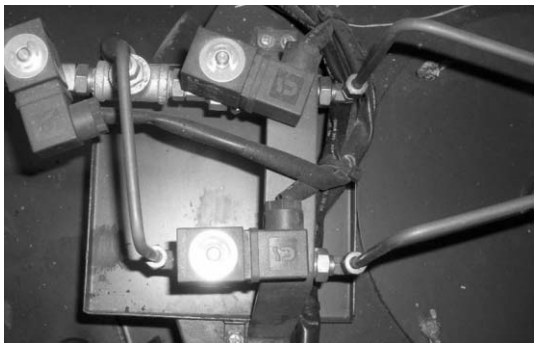


12. Check the oil burner in store. ☞ 60Page

13. Before assembling the oil burner, check the location of the high/low combustion copper tube lines.

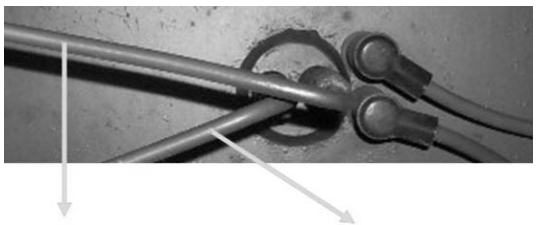


14. Be sure to assemble it like the picture below.



Low-combustion copper tube line

High-combustion copper tube line



Ignition pole cap

Low-combustion copper tube line High-combustion copper tube line

ZUV sensor

※ The installation location might differ depending on capacity.

14. Open the fuel valve.
    - Check if the oil is out through the oil pump aeration valve.
    - Check what fuel to use and open the fuel valve.
    - Be sure to close the fuel valve not in use.
15. Turn on the boiler.
    - Before changing the fuel, be sure to contact us and request combustion adjustment.
    - But for the adjustment, the boiler could break down, soot or delayed ignition caused.
16. Put the boiler in operation in conformity with Ch. 8. Operation Mode.

XI Trouble and its remedy

[In case a buzzer rings and a warning lamp is flickering]

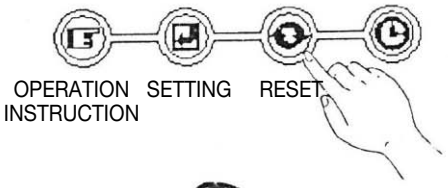
Note

Warning is to stop a boiler through informing any possible danger by means of a buzzer or a lamp by judging that comtinuous combustion is dangerous.

∗When a warning is generated the combustion is stopped automatically. Thereafter, post purge is proceeded.

∗A buzzer rings, a warning lamp is flickered, and information contents are displayed accordingly.

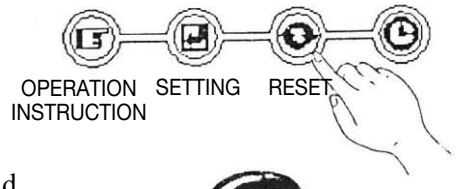
1. Check if post purge is completed.



2. Push RESET S/W once.
   - A buzzer stops.

3. Pursuant to 「Remedy before request for repair」, remove the cause for warning occurrence. ☞ 84page

4. Push RESET S/W once again.



5. Start a boiler in accerdance with 「Operation and Starting」 in chapter 8.
   In case same warning is generated repeatedly it may be other cause so contact our A/S office.
   ☞ 43page

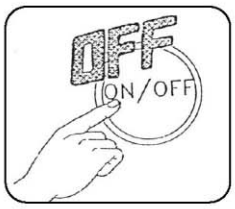
[In case an alarm lamp is lit up]

Note

Alarm is to inform that continuous operation of boiler may cause any danger leading to warning.

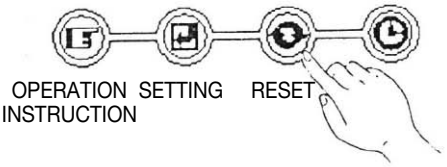
∗In case of juding that continuous operation may causeany danger leading to warning while operating continuously, the fire is proceeded as it is and operation is continued as well.

∗「Alarm」lamp is lit up.
In case of alarm a buzzer does not ring.



1. Turn combustion S/W as OFF.

2. Push RESET S/W once.

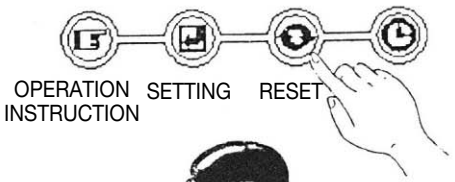


3. Pursuant to「Remedy before request for repair」, remove the cause for warning occnrrence. ☞ 84page

⚠ Warning

The sequence of removing the cause for alarm occurrence shall be done as designated. Incorrect operation may bring about a serious accident.

4. Push RESET S/W once again.



5. Start a boiler in accerdance which「Operation and Starting」in chapter 8. ☞ 43page
In case same warning is generated repeatedly it may be other cause so contact our A/S office.

[Remedy before request for repair]

⚠ Warning

In case of carrying out remedy of warning and alarm, be sure to turn boiler operation S/W as OFF and then do the work according to designated sequence accurately.
In case abnormality is not removed even with carrying out as described in the remedy, stop a boiler according to` Starting and Stopaand contact our A/S office without fail.
Do not other work than designated one, which may lead to personal accident.

1. In case a warning is generated
 - Push an operation instruction and then proceed to the work pursuant to the contents of the operation instruction.

WARNING ITEM	OPERATION INSTRUCTION
MISFIRE	Check if fuel V/V is opened or not.
FLAME OUT	Check if fuel V/V is opened or not.
FALSE FLAME	A remained flame is in the furnace. Check main V/V.
LOW WATER LEVEL	Check if a terminal of sensor is loosened or not.
WATER LEVEL NOT DETECTED	Carry out blow and check if a water level gauge is clogged or not.
HIGH WATER TUBE TEMP	Check if a terminal of sensor is loosened or not.
O.H.T.C FAULT	Check V/V is leaked out or not.
FLAME DETECTED	Check V/V is leaked out or not.
GAS LEAKAGE	Check V/V is leaked out or not.
POWER FAILURE	Carry out RESET operation.
LEAKAGE ELECTRICITY	Check if there is any wet instrument or not.
FAN TRIP	Operate RESET according to the mannal.
WATER PUMP TRIP	Operate RESET according to the mannal.
OIL PUMP TRIP	Operate RESET according to the mannal.

2. In case an alarm is generated
 - Push an operation instruction and then proceed to the work pursuant to the contents of the operation instruction.

WARNING ITEM	OPERATION INSTRUCTION
LEVEL SENSOR D FAULT	Check if a terminals of D ROD is loosened or not.
LEVEL SENSOR S FAULT	Check if a terminals of S ROD is loosened or not.
LEVEL SENSOR M FAULT	Check if a terminals of M ROD is loosened or not.
SCALE T.C. FAULT	Check if terminals of a sensor are loosened or not.
BLOW TIME	Operate blow according to the manual.
SCALE BUILT UP	Inspect a water softener and water tube. For a large amount of scale attachment, contact our A/S office without fail.

[Resetting of elecronic S/W]

⚠ Warning

In cas of working, be sure to turn main power as OFF.

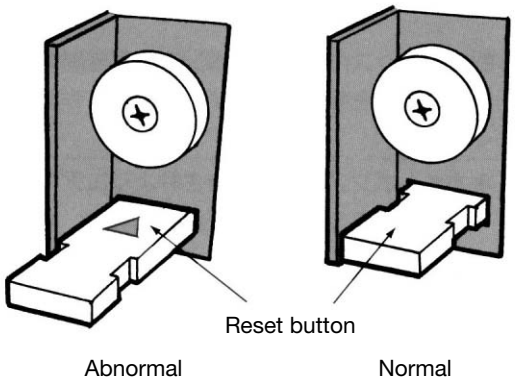
In case of operating main power, don't operate it with wet hands, which may lead to electric shock.

1. Operate 1 to 5 in 「In case a buzzer rings and a warning lamp is lit up」. ☞ 82page

2. Check electronic S/W in control box.

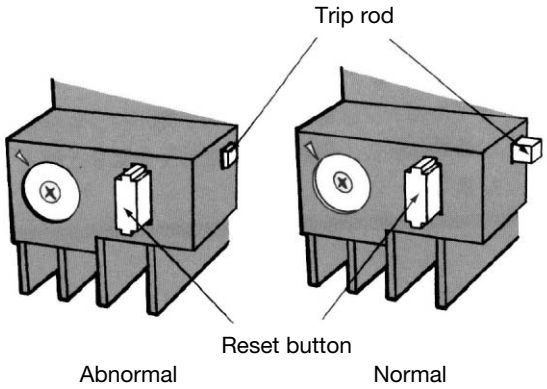
In case a RESET button for electronic S/W of fan motor is protruded.

Fit in a reset button through pushing and check a setting value.



In case a RESET button for electronic S/W of feed water pump is protruded.

Fit in a reset button and check if main feed water V/V in feed water tank is opened or not.



3. Start a boiler pursuant to the starting sequence.
   In case same warning is generated again, stop a boiler and contact our A/S office immediately.

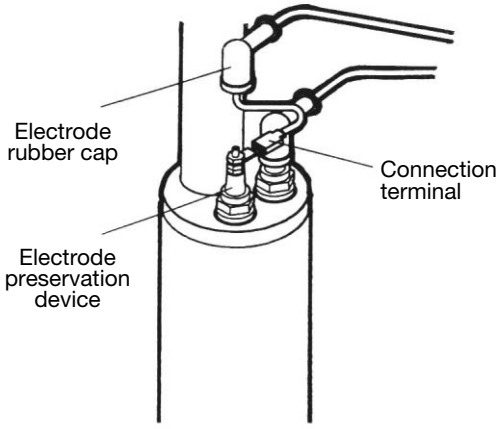
[Check on a connection terminal of electrode preservation device]

1. Operate 1 to 5 in 「In case a buzzer rings and a warning lamp is lit up」.
   ☞ 82page

⚠ Warning

Do the work after a boiler cools down fully.
(Longer than about 2 hours after stop)
Each part of boiler is composed of hot temp. materials so pay careful attention to any possible injury such as a burn and etc. immedidtely after stop of boiler.

2. Pick out an electrode rubber cap at top of electrode preservation device and check a connection terminal. Thereafter, attach the electrode rubber cap to the original location.

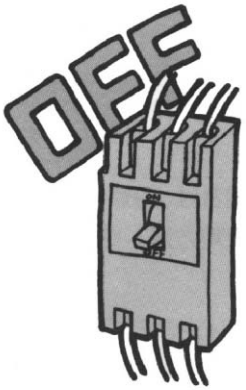


3. Start a boiler pursuant to the starting sequence.
   In case same warning is generated again, stop the boiler and contact our A/S office immediately.

[Remedy on electric leakage]

1. Operate 1 to 5 in 「In case a buzzer rings and a warning lamp is lit up」.
☞ 82page

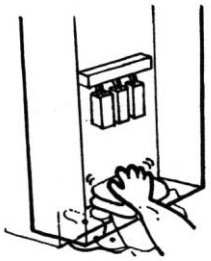
2. Turn main power as OFF.



⚠ Warning

In case of working, be sure to turn main power as OFF.
In case of operating main power, do not use wet hands, which may incur an accident such as electric shock and etc.

3. Check if the water in cntrol box and its circumference is leaked or not and if so, wash it with dry cloth cleanly.



⚠ Warning

Be sure to use dry cloth since an injury such as electric shock and etc. may take place.

4. Start a boiler pursuant to the starting sequence.
In case same warning is generated again, stop the boiler and contact our A/S office immediately.

XII Specifications

■ Specifications: EZ-GO and SGO Series

Item			Unit	EZ-500GO EZ-500SGO	EZ-600GO EZ-600SGO	EZ-800GO EZ-800SGO	EZ-1000GO EZ-1000SGO	EZ-1500GO EZ-1500SGO	EZ-2000GO EZ-2000SGO	EZ-2500GO EZ-2500SGO	EZ-3000GO EZ-3000SGO
Main body	Structural standards			Small once-through boiler					Once-through boiler		
	Design pressure		MPa{kg/cm²}	1{10}							
	Hydraulic test pressure		MPa{kg/cm²}	2.17{21.7}							
	Rated evaporation		kg/h	500	600	800	1,000	1,500	2,000	2,500	3,000
	Thermal power		MW{kcal/h}	0.3744 (321,885)	0.4492 (386,262)	0.5990 (515,016)	0.7487 (643,770)	1.1231 (965,655)	1.4974 (1,287,540)	1.8718 (1,609,425)	2.2461 (1,931,310)
	Heat transfer area		m^2	7.5	9.5				22		29
	Boiler efficiency		%	90%(*93%)					90%(*95%)		
	Water capacity		ℓ	132	156	163	157	159	361	345	469
	Fuel consumption	Diesel	kg/h	34.7(*33.6)	41.7(*40.3)	55.6(*53.8)	69.4(*67.2)	104.2(*100.8)	138.9(*131.6)	173.6(*164.5)	208.3(*197.4)
		Boiler kerosene		34.5(*33.4)	41.4(*40.1)	55.2(*53.4)	69.0(*66.8)	103.5(*100.1)	138.0(*130.7)	172.5(*163.4)	207.0(*196.1)
		L.N.G	Nm^3/h	35.8(*34.6)	42.9(*41.5)	57.2(*55.4)	71.5(*69.2)	107.3(*103.8)	143.1(*135.5)	178.8(*169.4)	214.6(*203.3)
		L.P.G+AIR		25.5(*24.7)	30.7(*29.7)	40.9(*39.6)	51.1(*49.4)	76.6(*74.2)	102.2(*96.8)	127.7(*121.0)	153.3(*145.2)
		Propane		16.0(*15.5)	19.2(*18.5)	25.5(*24.7)	31.9(*30.9)	47.9(*46.4)	63.9(*60.5)	79.8(*75.6)	95.8(*90.8)
		Butane		12.1(*11.7)	14.5(*14.1)	19.4(*18.8)	24.2(*23.5)	36.4(*35.2)	48.5(*45.9)	60.6(*57.4)	72.7(*68.9)
	Electricity	Power supply	V/Hz	3상 AC 220, 380, 440 / 60							
		Electric power	kW	2.65(Standard water) 1.71(High-temperature water)	3.4(Standard water) 2.46(High-temperature water)	4.1(Standard water) 3.7(High-temperature water)	6.3(Standard water) 5.6(High-temperature water)	10.3((Standard water) 10.3(High-temperature water)	13.65(Standard water) 13.65(High-temperature water)	15.65(Standard water) 15.65(High-temperature water)	19.65(Standard water) 19.65(High-temperature water)
	Weight		kg	1,200(*1,350)	1,540	1,550	1,660(*1,860)	1,900(*2,200)	3,890(*4,490)		4,080(*4,680)
	Shape	Width	mm	1,141(*1,314)	1,418	1,435	1,373	1,792(*1,818)	2,224		2,303(*2,448)
		Length		1,586(*2,031)	1,880(*2,108)	1,881(*2,108)	1,936(*2,144)	2,349(*2,279)	2,900(*3,089)		3,157(*3,195)
		Height		2,239	2,281	2,306	2,450	2,600	3,238		3,652
Connection size	Steam outlet size		A	32		50		65	80		
	Water inlet size			32			40				50
	Fuel inlet size	Diesel (K)		20							
		Gas(G)		40			50				
	Tube blow outlet size			25							
	Safety valve outlet size			32		50				65	
	Concentrated blow size			15							
	Chimney size		Φmm	250	290		330	360	510		
Burner	Combustion type			Forced mixing type			G:Forced mixing type, K:Pressurized spray type				
	Ignition type			Pilot ignition, high-voltage spark			G:Pilot ignition, high-voltage spark, K:high-voltage spark				
	Combustion detection type			UV photoelectric plate							
	Combustion control type			3 Position Control (High-Low-Off)							
	Controller			Micom Controller(ES-220 GO, performing temperature: 0℃~50℃)							
	Gas supply pressure		mmH_2O	1,000~4,000							
Cutter	Type		–	(*Once-through type)							
	Material		–	(*STS 304L)							

Note 1. The rated evaporation was measured when the water supply temperature was 20℃ and the steam pressure was the design pressure.
Note 2. The fuel consumption is according to the lower heating value.
Lower heating value – ① Diesel: 43,116KJ/Kg{10,300kcal/kg} ② Boiler kerosene: 43,400KJ/Kg{10,368kcal/kg} ③ LNG: 32,726KJ/Kg{10,000kcal/Nm^3}
④ LPG+AIR: 52,817KJ/Kg{14,000kcal/Nm^3} ⑤ Propane: 84,507KJ/Kg{22,400kcal/Nm^3} ⑥ Butane: 111,293KJ/Kg{29,500kcal/Nm^3}
Note 3. The efficiency was measured when the water supply temperature was 20℃ and has the margin or error of ±1.5%. For improvement, the specifications are subject to change without prior notice.
Note 4. The asteroid mark is for the EZ-SGO series.

XIII Appendix

■ About Maintenance services

① this product comes with warranty. Please keep the warranty when A/S personally personally perform test operation put some required memo on it and hand over to our customer.

② it's one year warranty from the date of the original purchase. But some parts cannot be covered by warranty, so please talk to A/S personal for detail information.

③ After warranty period, for the maintenance, please talk to A/S office. If repairmen require for maintenance, customer must over every expenses.

④ To know more about A/S and any troubles, pleaese contact A/S office.

■ MMP provides 3 areas of security

Relief ❶ inspection

① For prevention of any trouble, once in every 3month, MMP will make the walk around inspection.

② Boiler status will be reported to customer on print

Relief ❷ Warranty

① By warranty, boiler including pipeline and economizer will covered.

② Spare part and trip repair technical fee is free of charge

③ We promise to put the maintenance to the first priority

Relief ❸ Maintenance

① Mantain safety for safety device inspection

② Maintain the best performance and function of boiler

③ To Extend the life of boiler, we perform water analysis and pipeline inspection

∗ Boiler body

: Safety V/V inspection, tublar inside inspection, furnace pressure measurement, smoke and scale attachement condition and others.

∗ Burner

: Exhaust gas annalysis(O_2, CO_2, CO, temp.), burner inspection, oil P/P, electronic V/V, etc.

∗ Feed water

: Water softener, chemicals injection system, feed water pump, low water level isolation test, etc.

※ Consult our A/S office for further details.

■ Use rated product of leading maker for boiler chemicals.

∗ New TYPE combined cleaning material for a once-through boiler

KIM-800/KIS-700

Boiler mate KIM/KIS mostly suitable for mproving the feed water quality of boiler is new type combined cleaning material.(Tube cleaning material, oxygen removing material, natural film creation mix.)

Chemical name	Feed water temp (℃)	Injection temp (PPM)	Injection temp (kg/ℓ)	Remarks
For industry KIM-800	0~30 30~60 60 more	190 170 130	1.24	
For food KIS-700	0~30 30~60 60 more	260 240 180	1.19	
S/D(For industustry)		30	1.15	When removed 200ppm
F2(For food)		30	1.13	When removed 200ppm
New Tra-M		50	1.05	Double water tube treating material
M1				Standstill tube treating materia

Warranty card

【For recall】

MIURA

Warranty card

Product name			Warranty period
Model			Year
Manufacturing number			
Date of test operation	/ / /		Until
Date of installation	/ / /		
Location of installation	Company name	Representative	
	Address	(TEL)	
Branch office	Office name		
	Address	(TEL)	

※ Fill the above correctly.

- The product has passed Korea Miura Co., Ltd.°Øs strict quality inspection and tests.
- In the event the product breaks down within the warranty period due to a defect in the manufacturing process, repair and parts exchange are guaranteed.
- The quality assurance certificate is valid only domestically.
- Please present this certificate when requesting repair.
- The certificate is not reissued. Please keep it carefully.

Korea Miura Co., Ltd.

Main office: 701-1, Ace High-tech City 3, 55-20, Mulllae-dong 3(sam)-ga, Yeongdeungpo-gu, Seou
TEL. 02)2671-2410 FAX. 02)2671-0019
Factory: 449-1, Shindang-dong, Seobuk-gu, Cheonan-si, Chungcheongnam-do
TEL. 041)583-1822 FAX. 041)583-1825

Cut

After-sales service

1. the product malfunctions, please contact where you purchased it or a warranty service center near you. Miura Korea will do its best for customer convenience.
2. In case of free warranty service, no charge is incurred for the repair or parts. In case of charged warranty service, some charge can be incurred for the parts, visiting and technical service.

Warranty service

1. Free service

   If the product shows the following malfunctioning within ( ) months from its test operation, warranty service is given free of charge.

   - ●When the product's glitch is found during installation
   - ●When the product breaks down during normal operation

2. Charged service

   If the product shows the following malfunctioning after installation, some expenses are incurred for the parts, visiting and technical service for mending it.

   - ●When the free service period is expired
   - ●Malfunctioning from a natural disaster - fire, earthquake flood, etc.
   - ●Malfunctioning attributed to the customer - negligence in handling the product, etc.
   - ●Malfunctioning from the customer's arbitrary moving of the product, etc.
   - ●Malfunctioning from an arbitrary repair or alteration by a person not hired by Miura Korea
   - ●Malfunctioning from using a part or expendables not designated by Miura Korea
   - ●Malfunctioning from using a chemical not designated by Miura Korea
   - ●Malfunctioning from not following Miura Korea's guidance or blowing-related instructions
   - ●When the certificate is not presented
   - ●When the certificate is not or falsely filled in

User manual

Miura Korea's technician gives an explanation about the instructions in the user manual after test operation. Be sure to fully understand the instructions in it before using the product.

Warranty card

【User】

MIURA

Warranty card

Product name			Warranty period
Model			Year
Manufacturing number			
Date of test operation	/ / /		Until
Date of installation	/ / /		
Location of installation	Company name	Representative	
	Address	(TEL)	
Branch office	Office name		
	Address	(TEL)	

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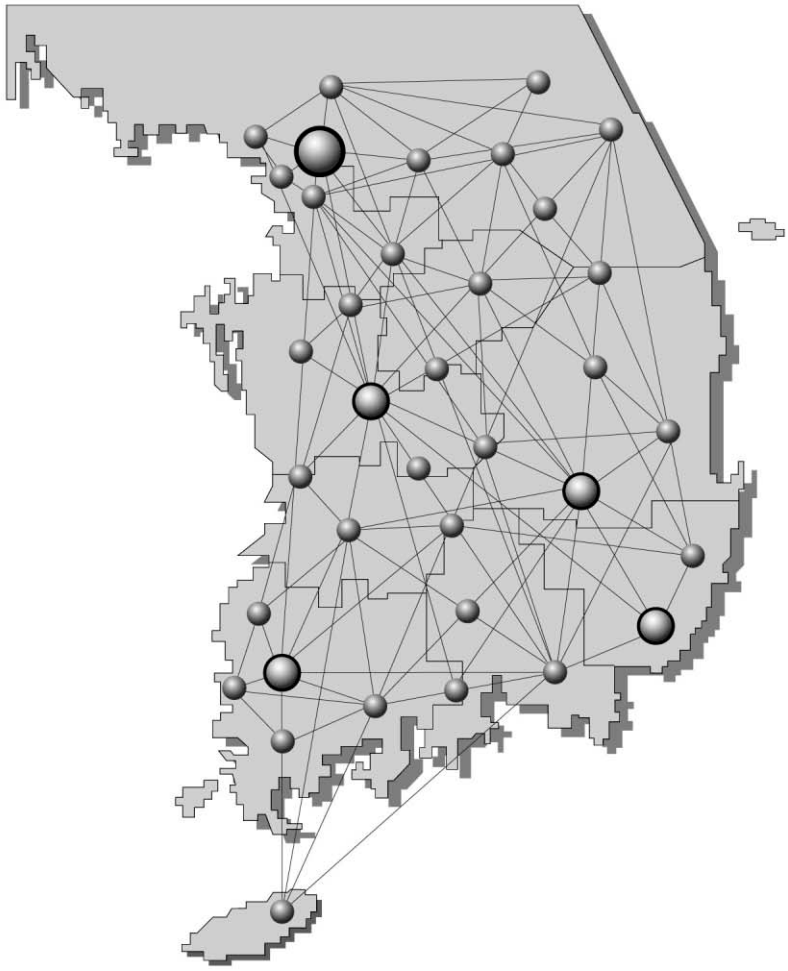
System control over our mationwide offices by computerized

Repair & control office of MIURA BOILER



KOREA MIURA CO., LTD

Main office: 701-1, Ace High-tech City 3, 55-20, Mulllae-dong 3(sam)-ga, Yeongdeungpo-gu, Seoul
TEL. 02)2671-2410 FAX. 02)2671-0019

Call the key number with no area code and request after-sales service. Your nearest service center will provide quick and thorough service.

Miura boiler, reliable anytime and anywhere

Miura Korea aftersales center **1588-6969**

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